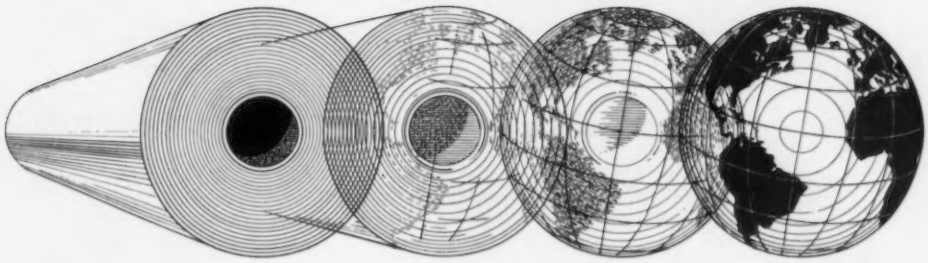
PAPER TRADE
JOURNAL

- *Advantages Of Sodium Sulphite In Grinders*
- *Special Maintenance Problems Of Smaller Mill*
- *How To Control Gumming With Isotopes*

April 23, 1956



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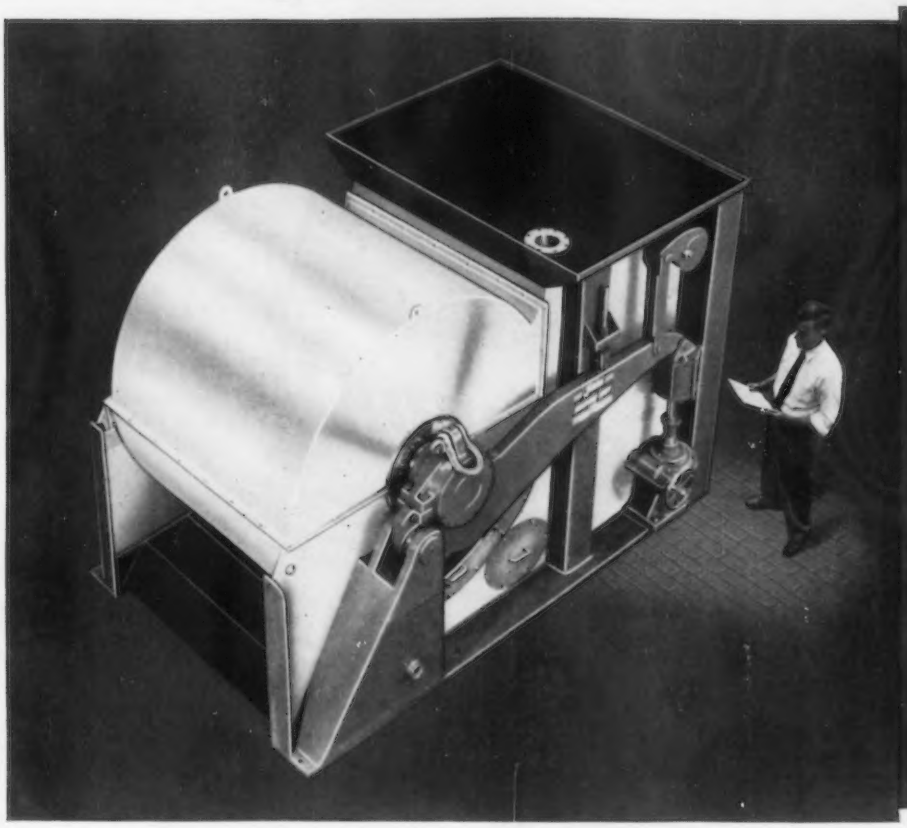

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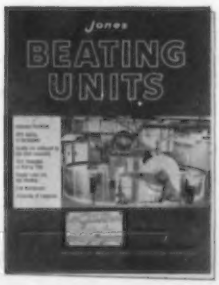
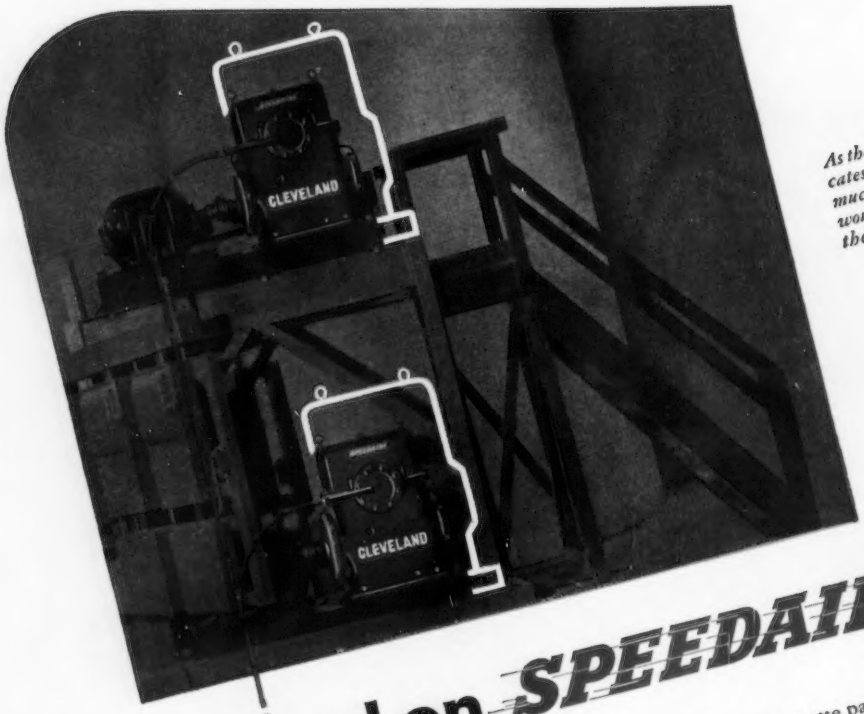


Jones



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REMEMBER THESE DATES

MAY 7-9: Coating Conference, Benjamin Franklin Hotel, Philadelphia, Pa.

JUNE 12-14: National Meeting of Superintendents Assn., Lake Placid Club, Lake Placid, N. Y.

JUNE 13-15: Summer Meeting Tech. Section, Canadian Pulp and Paper Assn., Manor Richelieu, Murray Bay, Que.

JULY 9-20: Fifth Statistical Conference co-sponsored by TAPPI and Tech. Sec., Canadian Pulp and Paper Assn., Queens University, Kingston, Ont.

PAPER TRADE JOURNAL

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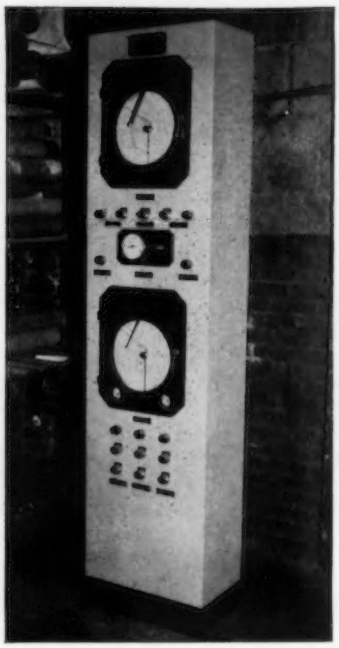

Taylor control panel for the Jones Liebeck Disintegrator in use at St. Regis Paper Company, Deferiet, N.Y. Instruments control and record consistency and level and operate shower water automatically.

The E. D. Jones & Sons Co. have built quality paper mill machinery for many years and are considered outstanding in this field. Their Liebeck Disintegrator is helping papermakers in all parts of the country to have low cost slushing for pulp and broke and prepare better beater furnishes.

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Jones Liebeck Disintegrators are custom designed to fit your problems and your available space. Taylor instruments are pre-engineered to fit this or any other application in the paper making process. When buying equipment for your mill, be sure to specify Taylor for complete satisfaction. Ask your Taylor Field Engineer for further information, or write Taylor Instrument Companies, Rochester, N. Y., or Toronto, Canada.

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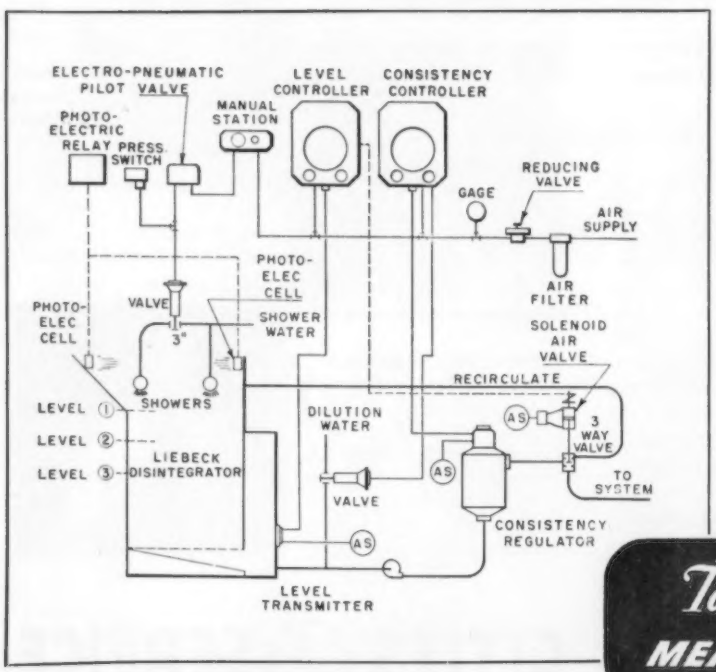

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OFFICES IN PRINCIPAL CITIES

Labor Accord Seen In Early Pact

U.S. observers feel that Canadian International Paper Co.'s quick labor peace with AFL-TLC leaders during recent new contract talks indicates amicable labor relations are likely elsewhere in the pulp, paper and board industry this year. The labor pact, which covers about 7000 workers and is described as a 25-cent two year package, generally sets the pattern for other mills in Ontario, Quebec, the Maritimes, and Newfoundland. A last minute report indicates Howard Smith negotiations will shortly conclude with an 8-to-10 cent hourly increase for 1600 Cornwall workers.

Record Rate For First Quarter

The highest quarterly production on record was established by paper and paperboard manufacturers during the three months ending March, 1956. Preliminary statistics indicate 8,100,000 tons were produced, an increase of approximately 4.5 per cent over the last quarter of 1955, the previous record high.

Output Forecast Tops Stanford Data

New production predictions for 1960, 1965, and 1975, based on latest available data, have been calculated by A.P.P.A. and are now presented in the February Monthly Statistical Summary. Most important aspect of the new production totals is that they are considerably higher than those of the Stanford Research Institute's, published two years ago in "*America's Demand For Wood, 1929-1975.*"

Folding Cartons Hit Peak

An indication of anticipated future sales, shipments of folding paper boxes shot to record all-time high levels during the first two months of 1956. The two month totals were valued at $73.4 million, a 15.1 per cent rise above last year's dollar figure for the same period.

Napkin Prices Up

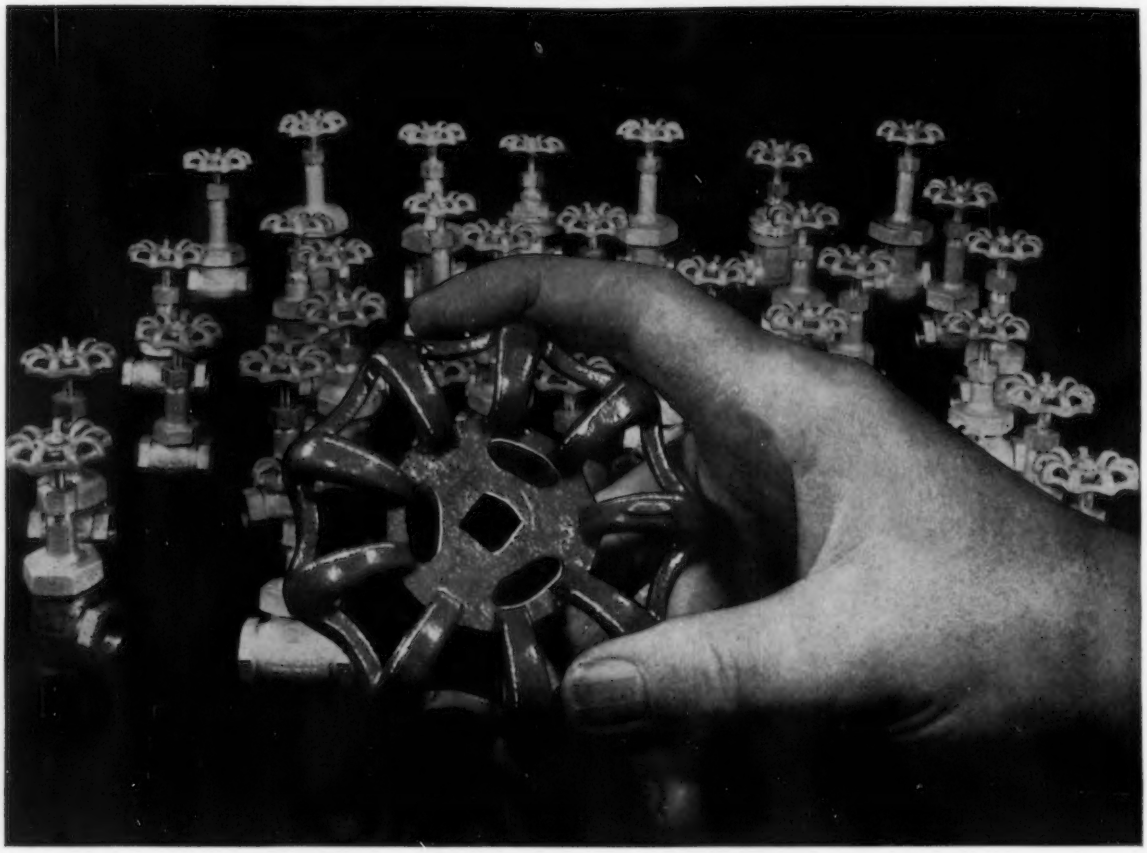
Paper napkin prices were hiked during the week by Hudson Pulp and Paper Co., further extending the rising paper and board price trend began last year. The increase amounted to 45 cents per case and was made effective April 15th.

Pulp Market Active

The woodpulp market is termed "very active" and "tight" by trade sources here. Consumption at the opening of the second quarter reached levels 10 per cent above December 1955 highs. At the same time, inventories have nosed downward slightly.

Rising Inventories Cause Some Concern

Several paper and board mill sources are currently expressing their growing concern about rising inventories at the customer level. Such forward buying is said to be a result of anticipated future higher prices. Producers say this development may soften the very excellent demand picture which has been experienced since late 1955. Producers' inventories are at normal levels.



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WEEK OF PAPER TRADE JOURNAL APRIL 23, 1956

New Mill for Hurlbut Paper Co.

Hurlbut Paper Co. is completing plans for an extensive expansion program over 1956 and 1957. This will involve the construction of a complete new paper mill to be located on the South Lee Road on what was formerly known as the O'Brien property. Details as to buildings and equipment are not as yet available. The final cost of the plant will be in the neighborhood of $3,500,000. It is hoped to have the plant in operation by the end of 1957 or early 1958.

The 120 inch fourdriner will be supplied by Rice Barton Corp. and stock preparation equipment by E. D. Jones & Sons Co.

Over the past four years, Hurlbut has been engaged in a highly technical research program involving the possible use of the full range of synthetic fibers such as glass fibers, aluminum silicate, nylon, dacron, dynel, and many others and they have developed quite a number of new paper grades that they have been unable to put into production due to their steady, heavy backlog of orders for present lines. Some of these new grades are already into production in limited quantities and fairly large quantities of synthetic fibers are now being used in production.

In January of 1954, they placed in production a new 92 inch fourdrinier.

$22,000,000 Expansion at Lakehead

Abitibi Power & Paper Co., will spend 22 million dollars on an expansion program at its Fort William, Ont., mill to increase, newsprint production from 65,000 tons to more than 150,000 tons a year.

The program includes a Beloit 276-inch high-speed newsprint machine, which will operate initially at 2000 feet per minute and is designed for a maximum speed of 3000 feet per minute. This new machine will commence production at the rate of 300 tons of newsprint a day. The expansion will also entail increased wood-handling facilities. Eight additional grinders and expanded screening facilities will be required to supply the groundwood pulp. There will also be an increase in the capacity of high-yield sulphite, refining and screening systems.

Adjoining the existing paper machine room will be a new building to house the paper machine. A revamped system of handling the finished product will be installed. An additional steam generator and expanded electrical facilities for the increased production are also included in this program.

Fast, Wide Coater Added At Oxford

Oxford Paper Co. reports extensive planning has been going on in the coated paper field, including market surveys and engineering studies. As a result of these studies the company plans to install at the Rumford (Maine) mill an 186-inch coating machine said to be designed for a maximum speed of 1800 feet per minute and equipped to produce top quality enamel coated papers.

The coater is one of several major projects being planned for the Rumford mill. Another project is the modernization of three of Oxford's thirteen paper machines at a cost of more than $2 million and the addition of a new color plant to the company's existing color producing facilities.

The color plant will be housed in a new brick and steel frame structure to be built at the north end of the Oxford beater department. This building will be 87 feet long, 29 feet wide, and 67 feet high.

Consolidated Water P.&P. Starts NSSC Expansion

Construction has begun on an expansion and revision of neutral sulphite semi-chemical pulping facilities at the Wisconsin Rapids Division of Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis.

Designed to accommodate the use of local mixed hardwoods, the construction program calls for a bleach plant addition and conversion of another sulphite pulp digester to the manufacture of semi-chemical pulp. Total cost of the project is estimated at $600,000.

Process changes will permit the separation of sulphite and semi-chemical pulps in bleaching and will provide for a continuous semi-chemical bleaching system.

Scheduled for completion late this summer, the addition and process revisions will put the company on a permanent hardwood pulping program increasing its semi-chemical pulp capacity to 100 tons daily.

The company recently completed a successful 10-day trial at this plant in which local mixed hardwoods were made into semi-chemical pulp. It was the first time this pulp was used in the manufacture of Enamel Printing Papers.

Rogers to Build News Mill in Colorado

J & J Rogers Corp. submitted the winning contract for three million cords of beetle killed spruce in Western Colorado. This was revealed by the U. S. Forest Service this week when the closed bids were opened. J & J Rogers is now owned by Standard Ore & Alloy Co. of New York. Plans call for the immediate construction of a newsprint mill with an initial capacity of 100 tons to reach 300 tons in three years. The mill site under consideration is about 160 miles west of Denver at Silt, near Glenwood Springs.

Decision has not been made as to whether the mill will be built and operated by J & J Rogers Corp. or under a separate name.

St. Regis-Rhinelander Deal Assured

St. Regis Paper Co.'s acquisition of Rhinelander Paper Co. has been assured by deposit of required number of Rhinelander shares.

Cuban Mill Orders Bagasse Newsprint Machine

Rice Barton Corp. of Worcester, Mass., has received an order to build a $1,750,000 machine to make newsprint out of bagasse, the waste residue of Cuban sugar.

This machine will be built for Technica Cubana, S. A., and will be set up at Cardenas, 80 miles east of Havana. It will make 100 tons of newsprint a day.

New Equipment Going Into Parsons Paper Co.

In a continuing modernization program, Parsons Paper Co., Holyoke, Mass., has scheduled a sizeable new equipment program for 1956, which is already in progress. On the program are the installation of a new water wheel and additional motor generator with new control attachment, Kidder rewinding equipment which will double capacity, a Vacuumatic counting machine, new electric eye localizing equipment, six additional leveling sorting tables, and such other items as an electronic trimming knife and a new elevator.

Scott Awards Contract For Mobile Expansion

Scott Paper Co. has awarded a major contract in its Mobile, Ala., plant expansion program to the R. P. Farnsworth Co. of New Orleans.

The contract covers construction of the principal process buildings in the $21 million expansion, which will provide a substantial increase in pulp-making facilities and a high-speed paper machine for the manufacture of Scott tissue grades.

St. Regis Acquires Pacific Waxed Paper

St. Regis Paper Co. has acquired the Pacific Waxed Paper Co. of Seattle, Wash., through the acceptance by over 90 percent of the stockholders of that company of an offer to exchange on the basis of 3.7 common shares of Pacific Waxed for one share of St. Regis common. Pacific Waxed is engaged in the manufacture of paper, film, and foil protective packaging materials from paper stocks, cellophane, pliofilm, polyethylene, saran, acetate, and foil. Pacific had net sales of $5,492,101 in 1955 and net income of $108,030. Products manufactured by Pacific are marketed in eleven western states, Alaska, Hawaii, the Philippines, and Central and South America. This extends St. Regis' operations in this field to an area which is not served by its Pollock Paper Corp. subsidiary.

New Book on Hardwood Pulp

"Hardwood Pulp, Its Manufacture and Use," by H. B. Shepard. New England Council. Boston. 1956. $2.00 pp. 67.

This compilation and study was made in 1955 under a research grant by the Federal Reserve Bank of Boston with which bank Mr. Shepard was long connected as forest economist. The study has special reference to Southern New England but is of very great interest to all the Northeast—and, for that matter, to the entire country.

The opening chapters review the development of the pulp and paper industry in the United States and the future prospects for that industry. The author concludes that: *"the anticipated future increase in domestic consumption of paper and paper board will have to be reflected . . . . in a corresponding increase in domestic production."*

The third chapter reviews the past history of the pulp and paper industry in New England and its present status.

As to the future prospects for the pulp and paper industry in New England, the author cites the advice in a recent report of Arthur D. Little to the Federal Reserve Bank: to make every effort to modernize and strengthen existing plants and to give consideration to opportunities to increase values through converting operations, upgrading the product into specialized goods. As an example, he cites the $45 million expansion program of Great Northern Paper Company. He agrees with the Little report that the neutral sulphite semi-chemical process, together with chemi-groundwood and high-yield kraft processes will certainly lead to the establishment of more hardwood pulping operations in the New England area. The author concludes this chapter with the prediction that: *"the use of hardwood pulps may well prove to be a major factor in the economy of the whole northeastern paper industry."*

The fifth chapter on "Prospective Pulpwood Requirements and Supply" cites recent statistics and forecasts possibly 52 million cords annually of domestic pulpwood required by 1975. What, he asks, are the possibilities of raising pulpwood cuts in the South, the North, and the West? He answers this question by predicting a great increase in semi-chemical pulping of hardwoods whose growth, in the Northeast, exceeds the drain by more than 15 million cords annually.

In Chapter Six the author takes up the matter of hardwood pulpwood procurement. He describes the usual method of purchase, that is from producers, and states that: "generally purchased wood is obtainable at considerably lower prices than wood produced by company-operated jobs." He also believes that: "Closer integration between pulp mills, sawmills and other types of coverting plants seems inevitable in this region." From the forest management angle, the author feels that under forestry practices, the annual yields of hardwood pulpwood will be double or treble the present one-fifth of a cord per acre.

Finally, the Report takes up the "Utility of Hardwood Pulp—Present and Future." The author does not go beyond the basic concept underlying this study, namely, the existence of a considerable number of already-established independent mills, making a variety of specialized and high-grade products. To these mills, the availability of hardwood pulp for purchase is of obvious concern—even to the extent of supporting such pulp mills financially or otherwise. Yet the author definitely favors the integrated mill—i.e. producing pulp and paper—"from the point of view of net returns on its investment."

The remaining chapters deal with Water Requirements and Supply, Stream Pollution, and Effluent Disposal.

The final chapter, "Summary and Conclusions," reviews what has preceded. Recognizing that a modern pulp mill of 300 ton daily capacity costs at least $30 million, the author points to the compensating advantages of a New England location and prophesies that if New England paper manufacturers fail to take advantage of the opportunity of the region, "someone may come from another part of the country" to do so.

If this study helps to overcome the obstacles of high taxes, high operating costs and other deterrents to a successful hardwood operation in the Northeast for pulp and paper, it will have achieved its purpose.

Paper and Board Production

According to the American Paper and Pulp Association, the ratio of the United States production to mill capacity for the week ending April 7, 1956, was 98.7 percent, compared with 101.5 percent, revised, for the preceding week. The ratio was 97.2 percent for the corresponding week a year ago.

The paperboard production ratio for the week ending April 7, 1956, was 94 percent, compared with 101 percent for the preceding week and 95 percent for the corresponding week last year.

(Detailed statistics on page 50.)

Thurso to Make Hardwood And Softwood Pulps

The new kraft pulp mill announced in last week's issue for Thurso, Que., will manufacture bleached kraft hardwood and softwood pulps of a high brightness in a ratio of about 60 to 40.

Engineering and construction of the new mill will be done by Foundation Co. of Canada. E. A. Charlton and assistants of Montreal will act as consultants. Equipment contracts are under negotiation.

Construction has already started and it is anticipated that production will begin January 1958.

The mill will be located alongside the Singer Wood Working plant at Thurso. The woods limits have already been developed by Singer and are served by a Singer owned 65 mile railway.

The hardwood pulp will be made from birch and it is reported will be of a grade not previously manufactured on this continent. Perkins-Goodwin is to be the exclusive sales agent.

A Hat for You and Ham!

A new Stetson hat — FREE — is now being offered by Shuler & Benninghofen, Hamilton, Ohio, manufacturers of Hamilton Felts, to those whose suggested ideas of the type of headpiece "Ham Feltz" should wear this summer are accepted and used in Shuler & Benninghofen advertising in this magazine.

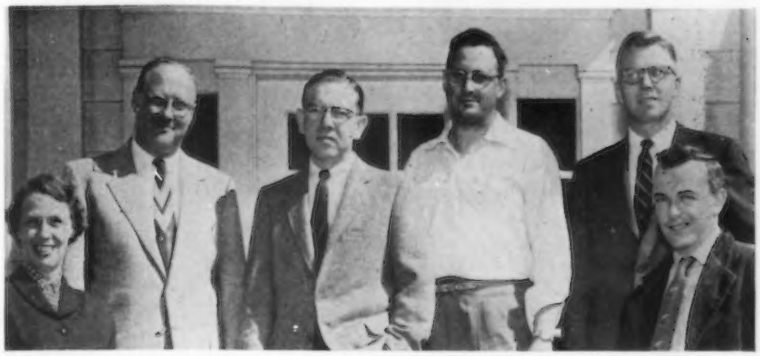
The happy, optimistic, philosophical trade character "Ham Feltz"—a contraction of the words Hamilton Feltz—has been featured for approximately thirty years. With changes in men's fashions his "headpiece" has been changed several times and it is believed that the time is ripe to change again. According to the offer, it is not necessary that the contestant be able to draw well—"a very rough sketch"—or paper folded into the suggested shape—is acceptable.

The decision of the artist who draws "Ham Feltz" will be final, but there are no other rules, conditions or obligations, except that no one connected with Shuler & Benninghofen or its advertising agency is eligible to win. All suggestions for headpieces should be sent to "Ham Feltz" in care of Shuler & Benninghofen, Hamilton, Ohio. The name of this publication should be mentioned.

To Represent Gaillet & Hartig

Gaillet & Hartig Co. Inc., New York City, announce that Edgar L. Boeck has been appointed their pulp sales representative for the United States market. Mr. Boeck had previously been associated for many years with Perkins-Goodwin Co.

Who's Who On The Production Line



R-W PAPER CO., Longview, Wash.—(left to right) Mrs. Louise Loehr, plant secretary; R. E. Harper, resident manager; A. E. Teschendorf, assistant chief engineer of Rhinelander Paper Co. and project engineer of R-W; Ralph Brouchoud, project draftsman; H. A. Hayward, sales manager R-W Paper Co.; and R. J. Musgrove, plant engineer R-W Paper Co.

OBITUARIES

George P. Maye, 61, vice-president of the Appleton Wire Works, Appleton, Wis., was fatally injured April 8, when his car struck a soft road shoulder near Sarasota, Fla., and plunged down an embankment.

Mr. Maye and his wife were returning to Appleton after a three week vacation in Florida. Mrs. Maye was not seriously injured.

H. Prentiss Christian, prominent in the paperboard and paper stock industry, died April 10, in Pasadena, Calif.

Mr. Christian formerly was with the Robert Gair Co., Inc., in New York City, and later joined D. Benedetto, Inc., New York, of which he was vice-president. Some years ago he left New York for the Pacific Coast where he organized the Pacific Coast Fibres, Inc.

Robert G. Whale, 56, president of the Whale Safety Paper Co., Waupaca, Wis., died April 9 while attending a convention in New York City. He suffered a heart attack.

Henry L. Stortz, 87, retired president of Henry Schmidt & Brother, Inc., paper box manufacturers of Philadelphia, Pa., died April 7 in Rolling Hill Hospital, Philadelphia. Mr. Stortz was a former active member and officer of the National Assn. of Paper Box Manufacturers. He retired in 1953.

Henry A. Armbruster, 71, retired production manager for the A. George Schulz Co., Milwaukee box firm, died April 4 of a stroke. Before he retired in 1951, Mr. Armbruster had worked for the A. George Schulz Co. for more than 40 years. He started with the firm as a machinist.

Alexaner W. MacVie, 71, of Kalamazoo, Mich., a pioneer paper technician, died April 9 in Borgess Hospital. Mr. MacVie, who retired in 1943, was active in the paper and pulp industry for nearly 50 years.

A native of England, Mr. MacVie was graduated from the Dr. Quirin Wirts Laboratory in London, who were the official chemist for the British Paper Assn. He worked as a chemist in a Scotch papermill before coming to the United States in 1905 as chemist for the West Virginia Pulp and Paper Co.

He was chemist for the Bryant Paper Co. in Kalamazoo for ten years and was active in the formation of both the TAPPI and the American Paper Mill Superintendents Assn. In 1917 he became manager of the experimental mill of the Eastman Kodak Co.

Later he went into the selling of foreign and domestic woodpulp, and was instrumental in bringing in the first foreign boat ever to carry supplies to Kalamazoo valley paper mills, after which he brought in shipments of Scandinavian woodpulp. He was active in this phase of the paper business until his retirement.

Ray B. Keller, 53, Hammermill Paper Co. printing supervisor for 30 years, passed away April 9. Death followed seven weeks' hospitalization.

Mr. Keller was a 1924 graduate of the Carnegie Institute of Technology, School of Printing Management. Following employment at Baker-Jones-Hausauer, Inc., Buffalo, N. Y., he joined the Hammermill organization on March 22, 1926.

He served as an officer of the Erie Club of Printing House Craftsmen and on various educational and publicity committees of the International Assn. of Printing House Craftsmen.

NEWS OF CONVERTERS

OF PAPER AND PAPERBOARD

NEW MOLDED PACKAGES BY BEMIS—The Tekmold Products plant of the Bemis Bro. Bag Co. in Minneapolis, is now manufacturing molded pulp containers for protective industrial packaging. The new containers are called ship shapes and are custom made for packaging specific articles of unusual fragility. The package above protects a delicate glass electrode.

New Packaging Plant For Danville, Ill.

Tee-pak, Inc., Chicago, manufacturer of paper casings for ready-to-serve meats and plastic packing material for other food products, will build a branch plant in Danville, Ill.

Ground will be broken on the 36-acre tract in July with completion scheduled for 1957. Approximately 300 persons will be employed at the new plant which will operate as a branch of the company's main plant in Chicago.

Denver Converter Moves to Larger Quarters

American Paper Products Co., Denver, Colo., is moving to new quarters with tripled space for expansion. L. C. Young, president, said the company is moving from 1640 Platte St. to new quarters at 2524 Walnut St. with usable space of 15,000 sq. ft.

The company buys roll paper for conversion to sheets, paper bath mats, place mats, industrial wrapping paper and other uses.

Campbell Named Secretary Of Orchard Paper

Keith S. Campbell has been promoted to the office of secretary of Orchard Paper Co. He succeeds Louis Weenick, recently retired.

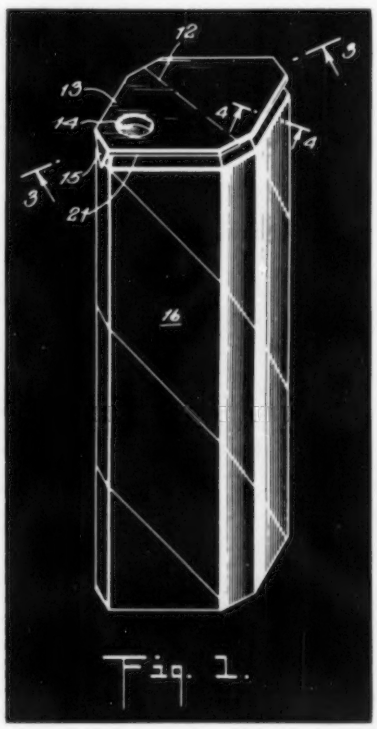


Fig. 1.

Invents One-Piece Leakproof Container

The Norden Leakproof Paper Container is a patented development not yet in commercial production but offering a new design that is said to be a marked improvement over the usual multi-piece construction of fluid containers. Made from a single sheet of paper, the Norden container is octagonal, has no seams, can be shaped to various sizes, and is provided with a patented closure top.

The inventor is Jesse Norden. Commercial development of the product is in the hands of J. J. Tepper, 30 Rockefeller Plaza, New York 20, N. Y.

The container is formed from a resin-impregnated kraft sheet in the range of 30 to 50 pound that is folded to provide layers for sides and bottom. Heat sealing action of the various laminations under pressure provides a rigid container. Preliminary drawings of the forming machine exist.

The forming equipment can be integrated with any packaging operation, it is said.

The promotors aim the production toward a number of packaged items: food (liquid, moist, frozen), lubricating oils, drugs, special chemicals, etc.

Dixie Cup Expanding South Carolina Plant

Dixie Cup Co. is enlarging the plant of the Individual Drinking Cup Co., its subsidiary manufacturing firm in Darlington, S. C. The addition will increase the production area by 28,000 sq. ft. and will involve the installation of more machinery. One-story brick construction is being employed.

Apex Paper Box Fire Loss Put at $150,000

Apex Paper Box Co., Cleveland, Ohio, on April 5 suffered a loss of approximately $150,000 in damage to equipment and supplies in an afternoon fire which started in the basement of the building occupied by the company. About 50 employes, 30 on upper floors, were at work when the blaze was discovered. Dense smoke cut off their escape through exits but all got out of the building safely either by ladder or jumping through windows in to the arms of rescuers.

Most of the employes were women.

Donald I. Zaas, 27, the only employe injured, gashed his right arm when he smashed through a window. Sam Grunzieg, owner of the firm, said cause of the fire is undetermined.

New Manager at Vancouver

H. V. Townsend has been appointed manager of the Martin Paper Products Ltd. plant at Vancouver, B.C. Mr. Townsend has been manager of the Martin plant at Calgary. Martin, with plants at Winnipeg, Calgary, Edmonton and Vancouver, is the corrugated container division of Powell River Co.

W. V. Shearer

R. S. Fay

Ted Brooks

Executive Changes at Plastic Coating Corp.

Following the recent death of William J. Warner, preseident of the Plastic Coating Corp., Holyoke, Mass., for twenty-four years, Samuel R. Sutphin has been elected chairman of the board. Mr. Warner has been succeeded by Walter V. Shearer as president. Garrison Householder continues as vice-president. All three men have been associated with the company for a period of many years.

The Plastic Coating Corp. is in its twenty-fifth year as a pioneer in the application of plastic type materials to paper and kindred products.

Laboratory facilities have been recently enlarged to accommodate an expanded research program.

Richard S. Fay, who for over twenty-five years has been active in paper converting operations, has been appointed manager of Cover and Box Paper Sales and Arthur M. Butler, sales manager of Kivar products.

To Be Known As Kimberly-Clark Products, Ltd.

Canadian Cellucotton Products Co., Ltd., is adopting the new corporate name of Kimberly-Clark Products, Ltd., H. E. Whitehead, vice-president in charge of sales, has announced. International Cellucotton Products Co., parent organization of the Niagara Falls, Ont., plant, was integrated with Kimberly-Clark last year.

National Fiberstock Builds Another Plant

Ground has been broken near Hammonton; N. J. for a $550,000 branch plant of National Fiberstock Envelope Co. of Philadelphia. The new envelope manufacturing plant, with 62,000 sq. ft. of floor space, will include offices, locker rooms, lunchroom and other facilities. It will be of concrete and steel construction completely fireproof.

Among those at the ground-breaking ceremony were N. J. State Senator Farley and J. W. F. Blizzard, president of National Fiberstok Envelope Co.

Johns-Manville Appointments

C. W. Hite has been appointed vice-president for industrial relations of Johns-Manville Corp. Other appointments were: Frank V. Galbraith, director of employe relations, and R. M. King and James G. Moore Jr., labor relations managers.

New H&D Sales Manager

C. Rowan Potts, in the corrugated box business since 1932, has been appointed Cleveland district sales manager for the Hinde & Dauch Paper Co. Mr. Potts will be in charge of the firm's Cleveland factory at 2110 W. 110th St.

New Style Wadding

Personal Products Corp., the Johnson & Johnson papermaking subsidiary, has developed Cel-Fibe, a new line of cellulose wadding for industrial packaging. Available in 55-inch and 5½-inch rolls, the wadding is claimed to offer superior handling ease and uniformity. A newly formed Cel-Fibe Division will market the product.

Named Sales Mgr. at Fonda

Standard Packaging Corp. has appointed Ted Brooks to the position of jobber sales manager of Fonda Container Co., affiliate of Standard Packaging Corp.

Mr. Brooks, for the past twelve years, has had various executive positions with Fonda. He will remain at company headquarters and plant in St. Albans, Vt.

Menasha Completes Anaheim Plant

Completion of the 187,000 sq. ft. industrial plant of Menasha Container of California, occupying 13 acres of a 30 acre tract at 601 East Ball road, Anaheim has been announced.

The $1,125,000 plant, in which operations were begun as sections were completed, is divided into three portions, one end being a warehouse, fed by railroad spur, to store unprocessed paper, while the middle portion is factory with corrugating and forming machinery, and the other end is storage area for finished product. This portion gives onto a covered loading dock which runs the width of the building and accommodates 12 trucks.

Deitsch Resigns from Waterproof Assn.

At a Meeting of the Board of Directors of the Waterproof Paper Manufacturers Assn. held at the Ambassador Hotel on April 8th, the Board regretfully accepted the resignation of Philip O. Deitsch, who had served the Waterproof Paper Manufacturers Assn. as its Administrative Officer from the date of its inception some fifteen years ago.

Mr. Deitsch continues to serve as Managing Director of the Gummed Industries Assn., Inc., the One-Time Carbon Paper Manufacturers Assn. and as Administrative Officer of the Industrial Bag and Cover Assn.

Fresh Look at West Coast Industry

E. F. Barker Paper Trade JOURNAL Field Editor

Report of two month tour by our field editor.

This map shows most of the principal points touched by Mr. Barker on his 6000 mile trip.

The writer recently returned from an extensive two month tour of the Pacific West Coast states. During this trip I travelled 6,000 miles and visited 44 pulp, paper and board mills.

We discussed pulp, paper and board making, status of the economy (with special reference to the West Coast), the employment picture, and plans for the future, with hundreds of people in the West's pulp and paper industry. We talked with management, operating superintendents, engineers and technical men.

Impressions

A summary of impressions that these people left with us is:

1—A general atmosphere of optimism is noticeable with regard to the future of the West Coast's industry.

2—There is strong satisfaction with current economic trends in the Far West in general.

3—There is considerable satisfaction and pride in the growth and development of the area's pulp and paper industry.

4—The Far West's paper people particularly recognize the necessity of experimenting with new processes and equipment, and the necessity of research in order to "remain competitive in the future".

5—The industry on the West Coast is concerned about the continued shortage of technically trained men.

Major Projects Visited

I visited most of the West's major expansion projects during the course of this trip and those which come immediately to mind because of their magnitude include:

- Potlatch Forest's seven vat 220-inch cylinder machine, with Pandia kraft continuous digester system, in Lewiston, Idaho, completed towards the end of last year.
- Longview Fibre Co.'s number seven machine installation in Longview, Wash.; the company's second major machine installation in three years, rated at 250 tons and expected to be in operation by October of this year.
- Western Kraft's new mill in Albany, Ore., the first mill built exclusively for the utilization of waste chips. While I was on the Coast it was announced that the mill would be doubled.
- The much-talked-about one-machine glassine mill (also in Longview, Wash.), a joint endeavor of Rhinelander and Weyerhaeuser and therefore named the R-W mill, expected to be in production by this summer.
- Crown-Zellerbach's new paper mill in Antioch, Calif. will get "screw" pressed pulp transported from British Columbia in tankers. To start up this fall.
- The C. Z. new paper mill which recently started up in Los Angeles is unusual in that it was planned for efficient small production to supply the existing converting plant using a new unique cylinder tissue machine.
- The Weyerhaeuser new pulp mill at Cosmopolis, Wash., which is the first sulphite mill to be built in this country in a number of years.

New Projects Announced

Among the new projects announced for the West Coast during my trip were: a new pulp mill and molded pulp products plant at Red Bluff, Calif., by Diamond Match; a new hardboard plant at Roseberg, Ore. by U. S. Plywood; a new paper board mill at Portland, Ore. by Herbert Malarkey; a new insulating board plant at Klamath Falls by Johns Manville; expansion of Masonite's hardboard plant at Uriah, Calif.; and a large kraft pulp, paper and paperboard mill at Toledo, Ore. by Georgia Pacific Paper Co.

Geographical Recap of the Tour

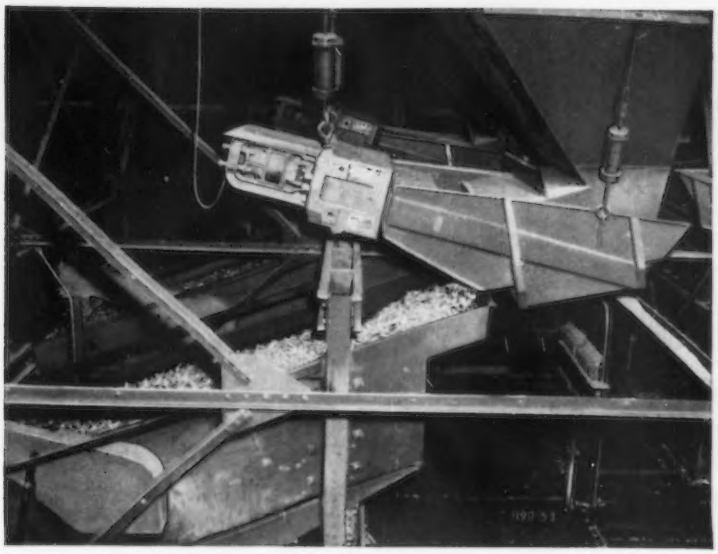
I left for the west coast from West Carrollton, Ohio. Drove through Indianapolis, Indiana; Lincoln, Nebraska, Cheyenne, Wyoming; Boise, Idaho; to Lewiston, Idaho; (first mill visit Potlatch Forest). Proceeded to Spokane, Washington. From there further West to Seattle region which became base of operations for visits to the various paper mill sites including, Everett, Port Townsend, etc. Then South to Tacoma and further South to Longview, Vancouver and Camas.

Trip continued further South into Oregon where all the major paper making centers (including Portland vicinity, Oregon City, West Lynn, Salem, Albany, Lebanon, and Springfield) were visited.

Mill visits in California, as the tour progressed further South, included contacts with the many smaller mills in the San Francisco Bay area, including Antioch. Tour then continued South to the Los Angeles area, another center of the paper industry.

The return trip (through Las Vegas, Nevada and Grand Canyon area) included a visit with a mill in Flagstaff, Arizona. Further East through Albuquerque, New Mexico; Amarillo, Texas; Oklahoma City, Oklahoma; Fort Smith, Arkansas; St. Louis, Mo.; Illinois; Indianapolis, Indiana; ending at point of origin.

JEFFREY electric vibrating feeders transfer wood chips at an orderly, uniform rate



A pair of 54" by 4' Jeffrey pan feeders regulating flow of chips to screens.

Battery of 5-D Jeffrey feeders discharging chips from bins ahead of the digestors.

Jeffrey feeders are built in many types and capacities. With their great variety of accessory equipment, they can handle the many feeding operations required in the processing of pulpwood and in the manufacture of paper. They are also employed in weighing, batching and proportioning operations.

Rates of flow can be controlled manually or automatically, and can be varied while a unit is running. Response is positive and instantaneous. There are no wearing parts, so maintenance costs are low and there are no shut-downs for lubrication or replacement of parts.

Jeffrey balances these feeders by proper timing of vibrations to suit their natural mechanical frequency. This insures most economical use of power and quiet, trouble-free operation. Vibration is isolated within the machines, so supports can be lighter and there is no transmission of vibration to the building. For complete details, write for Catalog 870. The Jeffrey Manufacturing Company, Columbus 16, Ohio.

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FIGURE 1—NUCLEAR GAUGE in operation on gummed tape machine at plant of Adhesive Products, Inc.

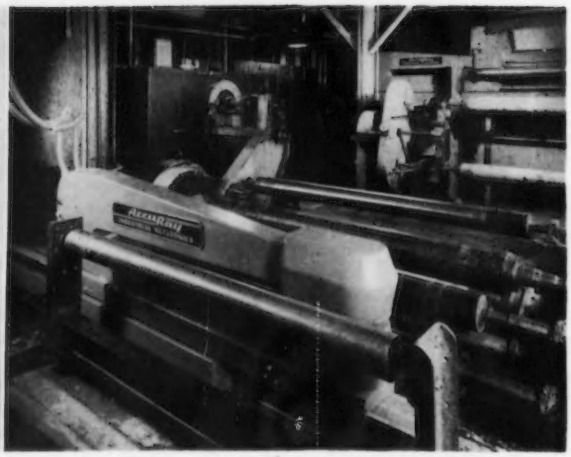

FIGURE 2—GAUGE in foreground measures weight of paper stock. Gauge in rear measures glue coated paper.

How Gummed Tape Manufacture is Controlled by Isotope Inspection

Herbert E. Carlson

Chief Chemist, Adhesive Products, Inc., Albany, Calif.

Radioactivity is now used in gummed tape manufacture at the Adhesive Products Company, Albany, Calif. Continuous nuclear measurement of the glue coating enables this firm to control quality to an accuracy which was impossible with former methods.

Process control was formerly on a cut and test basis common to the industry. The glue coating machine had to be slowed down or stopped at frequent intervals to allow sample extraction. The sample was then weighed and machine adjustments made to correct any deviation from specified weight. This method was not only costly in time and materials lost, but also failed to inform the operating personnel of process variations taking place between the sample extractions. Close control was very difficult.

These problems were overcome by the installation of AccuRay measuring equipment, supplied by Industrial Nucleonics Corp., Columbus, Ohio. Now glue coating weight is monitored continuously as it is being applied, permitting exact reproduction of previous runs. The inherent increase in quality is obtained without mechanical contact to the sheet, a requirement dictated by the very nature of the process.

Gumming Process

Gummed tape is manufactured in our plant by passing the paper sheet over a glue coated applicator roll. The amount of glue picked up by the paper is metered by adjusting the thickness of the glue layer on the applicator roll. The coated sheet is then passed through a dryer and re-rolled. This method is known in the industry as "Kiss-gumming." The working length of the equipment is approximately 200 feet. The greater portion of this amount of material may be lost each time the machine is stopped for sample extraction.

Testing Equipment

The AccuRay system includes a weight detection unit located at the unwinder, measuring weight variation in the uncoated paper (Figure 2, lower left). A similar unit measures the paper plus the glue (Figure 2, upper right) after the coating has been dried, just prior to re-roll. Synchronized electrical drive of both units enables the operator to measure in any position across the sheet by the adjustment of a remote control. The control is calibrated in inches from the center of the sheet to aid the operator in checking the cross-sheet profile while the machine is in motion.

The sensing element of each gauge is the source-detector unit mounted at the open end of a "U" shaped, metal frame. The lower arm of the "U" Frame (Figure 1) which passes under the sheet, contains source of high speed electrons, or beta rays, which penetrate the sheet. The upper arm of the "U" Frame contains a detector which produces a small electrical voltage proportional to the number of electrons intercepted. The amount of beta ray penetration will vary inversely with the mass of the sheet passing between the source and detector. This means that fundamentally the gauge measures weight per unit area, the same

information obtained by weighing a sample of known area on a balance. The gauge is then calibrated in the same units formerly used in the process control.

The electrical signals from both gauges are translated into lines on a strip chart recorder. We use a dual recorder to present the changes in raw paper weight and glue coated paper weight on the same chart. The gauges are calibrated so that the nominal weight for the paper and the desired weight of the paper plus glue are presented at the center of the chart. This means that if the operator adjusts the machine until the lines on the chart are superimposed, the proper amount of glue coating is applied, regardless of variations in the raw stock.

A built in circuit initiates and completes the gauge standardization automatically at one-half hour intervals. This feature eliminates influence by outside factors such as temperature, dirt and humidity. Standardization and a unique balanced measurement system insure the gauges to be accurate within one percent.

In order to compare the operating advantages, the AccuRay recorder was covered for several days of measurement, while the process was controlled by the usual methods. Later the recorder was uncovered so that the operator could see the chart lines and make adjustment accordingly.

Results Obtained

The section of chart shown in Figure 3 shows the lines from the two gauges during the period of control by the sampling method. The left hand line is that of the raw paper, while the line on the right represents paper plus glue. In this example, the glue coating is approximately 2 pounds per ream heavier than specification target. This condition had occurred between sample checks and made no visible change in the coated sheet.

If the lines in Figure 3 could have been seen by the operator, he would have adjusted the machine until they were superimposed, as in Figure 4. Thus, 2 pounds per ream of glue would have been saved throughout the duration of the roll. Figure 4 represents the bulk of operation during the test period in which the recorder was uncovered. The operator could adjust for any changes in the machine which would cause the glue weight to become heavier or lighter.

Many other advantages of nuclear gauging have become evident since the equipment has been in use. The operator's ability to adjust rapidly the product to specification following order changes and start ups have greatly increased the maximum utilization of machine time. Elimination of stops for sample extraction enhance continious machine operation. Stops and starts not only affect the efficiency of the gum coater, but also cause losses in machine time on all succeeding stages of the process.

The gauges are also extremely valuable as over-all control tools. Any changes made in the process are reflected as an end result in the glue coating weight. The chart recorder will often bring to light a malfunction in the process such as glue temperature cycling, loss of drying capacity, sudden changes in glue viscosity—long before they would be noticeable by previous measurement methods. These advantages are as important in many respects as the actual immediate dollar savings.

Factors in Dollar Savings

The AccuRay installation has been in operation for several months. Quality control engineers expect that the gauges will provide a substantial annual savings. Some of the contributing factors for these savings are:

1—Continuous and closer control eliminates wasted glue on material coated heavier than specifications, as well as reducing the amount of material rejected for lightweight coating.

2—A savings in material which would have been wasted due to the previous process control method of stopping the machine to cut-out weighing samples.

3—Ease of obtaining sheet profiles while the machine is in operation results in a more even coating across the sheet, thus eliminating wasteful heavy or light sides.

4—Continuous measurement enables the operator to bring the glue coating weight to specification more rapidly, following start-ups and specification changes. This results in more saleable product per unit of machine running time.

The advantage which cannot be measured in dollars, but certainly outweighs all others, is that of increased product uniformity and reproducibility. We can assure our customers that they are receiving the highest quality material that can be produced. This is not only true of the first order, but of all succeeding orders.

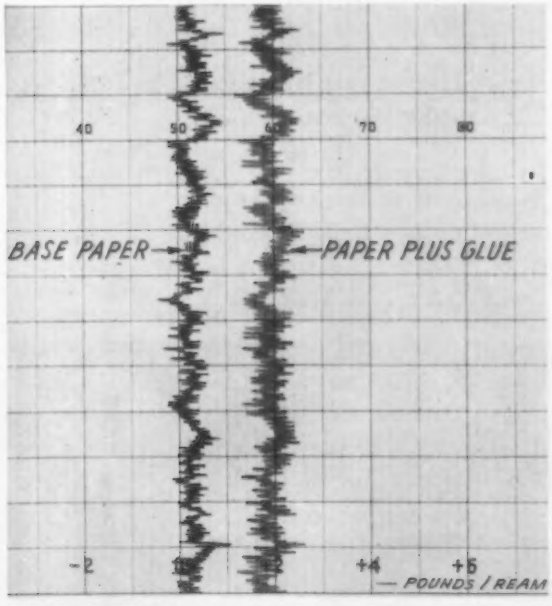

FIGURE 3—Chart obtained when hand sampling was used. Note glue coating was two pounds too heavy.

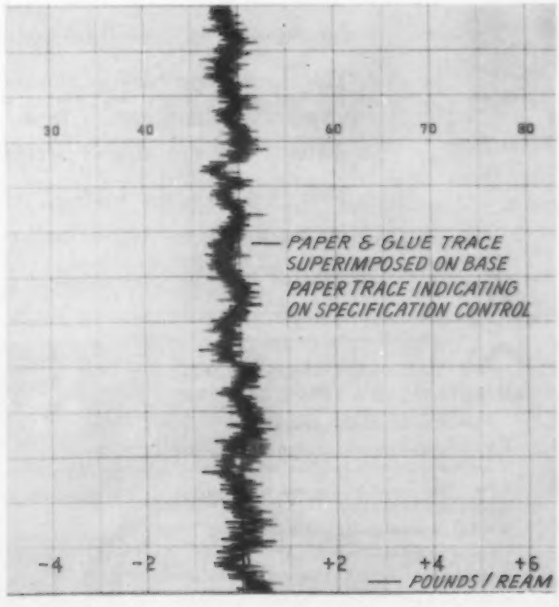

FIGURE 4—Chart when operator used nuclear gauge readings to guide amount of glue applied.

It's in the Bag!

Fresh, Clean Ink for a Year of Trouble-free Recording

★ You won't have any messy, time-consuming re-inking of pens on the new Bailey Recorders. The entire system is white-glove clean—hermetically sealed, non-evaporating, non-corrosive. Gone is any chance of sludge or oxide formation. Gone are clogged pens, interrupted records, unsightly splashes.

The transparent plastic ink sacs are changed once a year—that's all. Capillary tubing carries fresh, clean ink to the pens continuously without any day-to-day attention.

This exclusive new inking system* is only one of the many time-saving, money-saving distinctive features of the new Bailey Recorder.

Ask for Product Specification E12-5. P34-1

*Now available for the New Bailey Recorder only.

ONLY BAILEY OFFERS ALL THESE ADVANTAGES IN A SINGLE RECORDER

- Pre-calibrated plug-in receiver units
- Up to four pneumatic or electronic receivers —or two receivers and two integrators
- Any four variables on one chart—easily read and interpreted
- A full year's ink supply at one loading
- Faster ordering—from stock
- Minimum inventory of parts
- Minimum instrument investment for process cycle expansion or alteration

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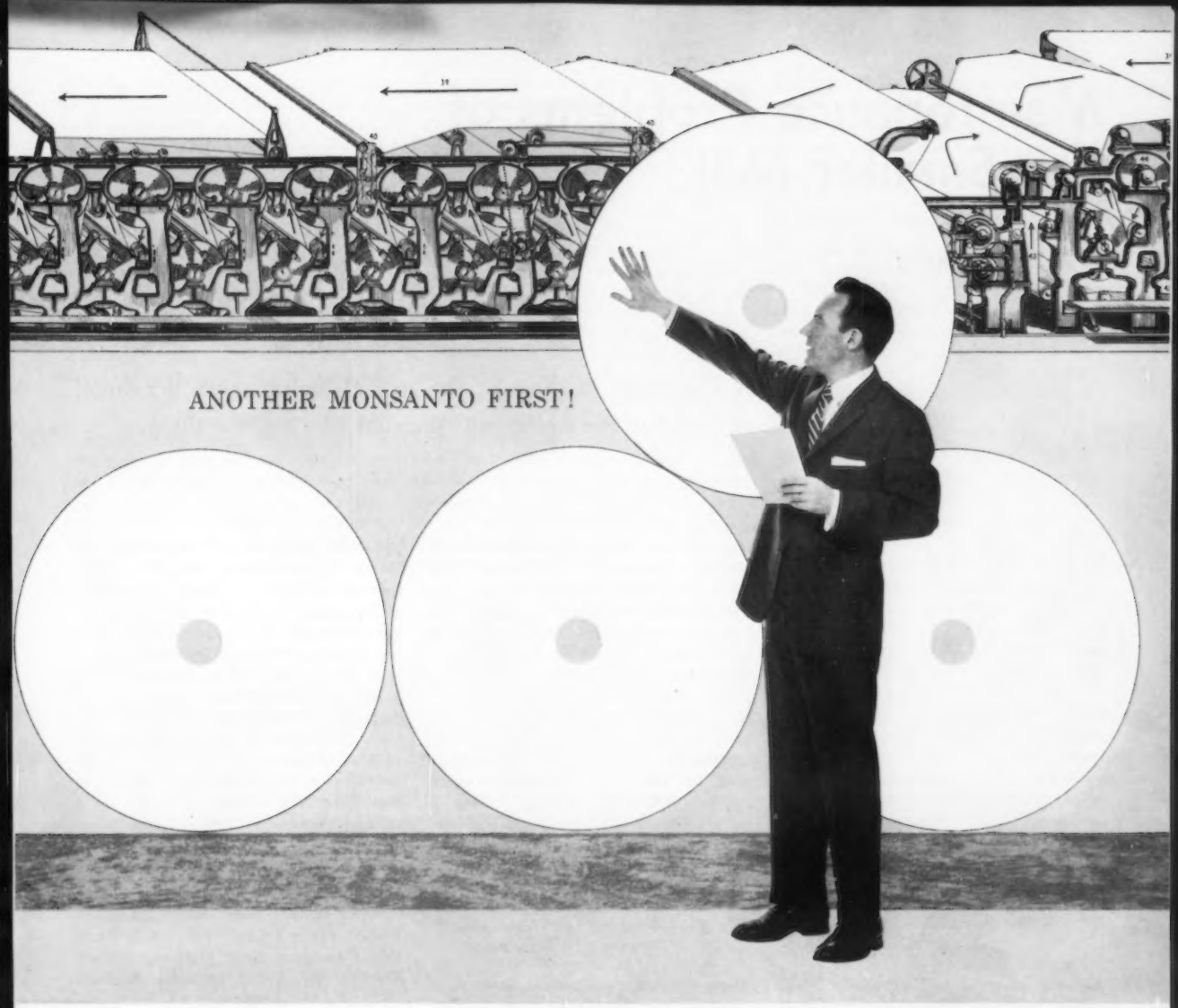

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Maintenance Problems of the Smaller Mill

A. J. Vreudenburg

A discussion of some of the special maintenance personnel and organization problems peculiar to a smaller plant.

As a natural sequence in describing preventive maintenance in various sized paper mills, it becomes quite evident that we should begin with the small paper mill. This term is used relatively to indicate a paper or a board mill producing 100-150 tons per day, with three or four machines, with the necessary stock preparing equipment, finishing room and shipping department. The maintenance crew of such a mill, including power plant employees, will normally consist of approximately thirty men, and is generally supervised by the master mechanic, with plant engineering assigned to the plant superintendent or a production executive as a part of the general duties.

In the small mill it is far too often the case that the maintenance supervisor is a working master mechanic, and in his normal duties he finds that he just does not have the time for the required proper analysis of preventive maintenance problems, particularly with regard to eliminating future problems by means of a redesign of existing conditions. The plant superintendent, who may have plant engineering as a part of his duties, is naturally very much occupied with the production problems which are his main reason for existence and employment, although he may be a qualified and graduate engineer with sufficient background of practical experience.

Keeping Maintenance Supervisor Up-To-Date

In the smaller paper mill, often the master mechanic is thoroughly qualified to supervise all of the maintenance and other work required in the mill, however, our present development of machinery is fast outstripping the educational level of many of the men employed in this capacity. This does not mean that these men are not capable of absorbing the technical knowledge required, nor does it mean that they are not good men. The main difficulty generally is occasioned by the fact that they are kept too busy running the mill. The demands made on a working master mechanic are often the main reason why his technical knowledge has not kept abreast of the times. It is very definitely suggested that the plant superintendent and the master mechanic have a distinct understanding concerning this problem and the requirement in the maintenance crew for men with sufficient, modern technical knowledge to keep abreast of the progress in paper making machinery.

In most cases the present employee can be trained, and a relatively small investment in time will enable the master mechanic, his foreman, and/or his leadman to keep abreast of improvement in machinery. A suggestion with respect to improved technological knowledge includes a study of articles in the leading industry magazines, a study of the types of equipment applicable for use in the particular mill, and a further study from textbooks to determine practical application. This would be more practical than a course in an accredited institution of learning. It stands to reason that the latter method would provide the greatest amount of knowledge, but it is also apparent that the supervisory employees cannot be spared from their jobs for a sufficient length of time to accomplish the desired results.

A. J. VREUDENBURG was plant engineer for the Paterson Parchment Paper Co., Bristol, Pa. for 22 years. He retired in 1954 due to failing health. Before joining Paterson Parchment he had a wide experience in the textile field, power plant engineering and building construction, both in design and field erection phases. He is a graduate of Columbia University and a member of P.S.P.E., N.S.P.E., A.S.M.E. and several other engineering societies. He is also a member of TAPPI.

Plant Improvement

While talking about the personnel arrangements in a small mill, consideration should be given to the question of plant improvement, the degree of which in most cases is a reflection of the ability of the men in supervisory capacities in any type of mill. It is an established axiom in any industry that a plant must either continue to improve or go broke, and it generally becomes a major part of the master mechanic's duties to work with the plant superintendent or manager in deciding the type of improvements which will fit in best with plant production and economics. In the consideration of a particular type of improvement, there has always been a tendency to depend on local construction contractors for the design of structural change in plant buildings, as well as a tendency to depend entirely on machinery manufacturers for changes or replacements in plant equipment.

The writer has no issue with contractors or machinery manufacturers, and each of them can definitely perform a service in respect to the final installation of any plant improvements. It is the writer's contention, however, that in the long run a very definite saving can be obtained if a qualified engineer or engi-

neering consulting firm is retained, either on a retainer or on a job basis on any expenditure which may involve a cost of $5,000 or more. It is rare indeed for a small mill to be able to afford to employ a qualified engineer who has complete and up-to-date knowledge and experience in structural design, mechanical design, electrical design, etc.

A consulting engineer, if properly selected, will correlate all the obtainable information and requirements and apply his knowledge of the type of paper manufacturing in which the mill is engaged to the problem at hand. In many instances he will discuss even the smallest problem with other members of his profession or with other members of his organization. There are also many other benefits which can be obtained from the employment of a consultant for the purpose of installing plant improvements. In his experience he will be able to point out ways whereby savings in the purchase of the various component parts of an improvement may be obtained, and perhaps during the course of his meetings with the plant manager and master mechanic, it may be decided that savings may be obtained by means of doing some of the work as part of maintenance or by the maintenance crew. The consulting engineer will also have up-to-date experience with similar improvements in other paper mills, and he may be able to suggest a better layout for maintenance purposes, or he may be able to suggest equipment changes which will prove of lasting benefit.

Lack of Adequate Records

In the practical application of preventive maintenance in a small paper mill, it has been the writer's personal observation that many of these mills do not have adequate records. If it so happens that there is no definite preventive maintenance program, a lack of records, and no proper engineering technocracy, then the management should be broad-minded enough to view the existing problems from a purely objective viewpoint; and the management should institute a series of discussions with the maintenance personnel to correct the problem. All of this is perhaps said a little strongly, but there have been too many instances where the pressure of every-day problems is so great that the benefits of a planned program and proper records are a matter of second consideration—just something that no one ever does anything about.

For a small paper mill it is suggested that the plant superintendent and the master mechanic work together to determine the requirements in the mill for a proper record system. In a situation of this kind, the master mechanic, whether he be working or not, is responsible for every phase of maintenance supervision. He is responsible for the stock of spare parts, of spare motors, gear boxes, speed reducers, pumps, etc. Generally, a man who acts as a part-time stock room clerk and draftsman will more than earn his wages by helping the master mechanic in regard to necessary drafting work, laying out machinery changes, and in keeping the records of all equipment.

A stockroom card system where the cards indicate the part, how many in inventory, how often they are used, and the minimum number required in stock, is the only way whereby sufficient parts can be kept on hand to meet those emergency repairs and demands which are constantly being made on the stockroom. Another necessity is an electric motor card file where the cards show the complete nameplate reading, place where it is installed, a record of the amount of maintenance spent on it, and the frequency of type of breakdown together with the location of a motor which can be used as a spare. Included in the electric motor card file there should be a card on replacement motors which are actually more or less a subject by themselves. Whenever a new installation is made, it is the prime duty of the plant engineer or the master mechanic to purchase new motors which will match existing motors in horsepower, voltage, types of speed, etc. It is often possible to design a drive for a new piece of equipment in which the motor will be a duplicate of an existing motor in the plant.

The other equipment in the plant, such as pumps, gear reducers, etc., should be kept in a separate card file so that a permanent record is made of the maintenance problems of each piece of equipment. In other words, if a bearing on a gear reducer runs persistently hot and breaks down frequently, it is quite evidently overloaded or poorly designed and sometimes breaks down several times before this piece of equipment is considered faulty.

Up-to-Date Drawings Worth Cost

In a discussion of records and filing systems, it is an advantage to obtain up-to-date drawings of existing equipment and buildings, together with the manufacturers' detailed drawings of the equipment itself. Any expense incurred in preparing these drawings will pay many dividends in the design of plant structural changes or improvements. Records of this type are invaluable in discussing plant improvement with consulting engineers for they are the bases on which engineering fees are kept to a minimum. They will often show that a new piece of equipment may be installed with the thought in mind that it will be changed to another piece of equipment when the production capacity of a given machine is increased, or when the product itself is changed. This applies in particular to layout drawings for new installations where future changes must be considered as well as maintenance accessibility.

No Mill Can Afford to Delay

In talking about preventive maintenance as applied to a small paper mill, it is generally the paper mill which has no records and no preventive maintenance program which is the first to say they can't afford the expense involved. It is the firm belief of the writer that any mill cannot afford to delay a study of preventive maintenance, future plant improvement, and a proper recording system for maintenance purposes. On the other hand, once the decision is made to institute such a program, it still must be proved whether or not it will pay for itself. Proper maintenance programs will result in less unscheduled shutdown time, more production, and lower operating costs, even including the expense of hiring any necessary additional employees. There is no question about the benefits to be obtained by proper preventive maintenance, but the personnel in charge of maintenance must first convince management of the need for improvements with some definite statement regarding what can be done.

The Human Problem

The writer also feels it is timely to talk a little about the human equation in paper mill maintenance department operation. It is well known that a small mill makes many more varied demands on each individual connected with the maintenance than does a large mill. In a large paper mill the maintenance crew is large enough so that specialized mechanics can be employed. Most small mills exist because they either make a specialty product or because they can compete in a local market, such as in the case of so many small board mills. The economics of a small specialty mill and a small board mill are naturally such that the highly competetive product produced always affects the maintenance program.

It stands to reason that the above discussion will not in any way achieve its purpose if the will to improve is not inherent in the people in charge of plant maintenance; and it also stands to reason that the prime requisite of good preventive maintenance is good housekeeping, the recognition of an accident hazard, the elimination of flooding of waste water over floors, and regular inspection and cleaning of motors, pumps, walk ways, etc. In some mills a good part of the equipment is practically inaccessible without stepping over moving equipment or production debris.

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Use of Sodium Sulphite at the Grinder Showers

...in the Groundwood Process

James A. Cochrane
Chemical Engineer, Powell River Co., Ltd.

A process for reducing the energy required to produce groundwood pulp and for brightening groundwood was developed by the Powell River Company, and has been in successful operation in the Company's groundwood mills for two and one-half years. Sodium sulphite, at 0.8 per cent on the dry weight of screened groundwood pulp, is added to the grinder showers, and the presence of this chemical in the grinding zone has given a reduction in energy requirements of 8.7 per cent, thus permitting an increase in newsprint production where power was limiting, and an increase in groundwood brightness of 2.5 points G.E.

Apart from the increased production, the groundwood mill has been unaffected by the change to sodium sulphite treatment. Groundwood strengths have remained normal, and the treated stock has had no noticeable effect on newsprint machine operation in the speed range of 700 to 1,900 f.p.m.

Sodium sulphite treatment has had little or no effect on pulp yield. Tests have indicated that the yield loss resulting from the use of sodium sulphite in the groundwood process is within the limits of error of the measurements used.

At 0.8 per cent sulphite treatment, mill corrosion is reduced from that experienced with zinc hydrosulphite brightening, but would probably be increased slightly in comparison to no treatment.

The large amount of energy required to convert wood to groundwood has long been a major problem throughout the newsprint industry. Where power is limited, or where, because of unusual conditions, normal power supply may be curtailed, newsprint production becomes limited. Two possible methods of increasing groundwood production are an increase in total power available or a reduction in the energy requirements of the groundwood process.

Considerable work has been done in many places and over an extended period of time to improve pulp quality or to reduce energy requirements in grinding. This work has included the long-term development of artificial stones and their continued improvement, the development of new types of grinders, and extensive studies of such grinding variables as stone composition, method of burring, stone speed, grinding pressure, pit consistency, grinding temperature, and degree of stone immersion. However, improvements in the groundwood process achieved by such studies have been essentially mechanical, and it has long been the firm belief of groundwood producers that for a fixed wood supply and a relatively inflexible set of grinding conditions, the production of a high-strength groundwood at a given freeness could be achieved only by high energy consumption.

One logical approach to groundwood improvement is the idea of adding a chemical to the grinding zone of a pulp grinder in order to effect some desired change in pulp characteristics, such as pulp strength, brightness, energy requirements, or to reduce subsequent processing problems arising from wood containing pitch or extractives.

Such an approach has apparently occurred to a number of groundwood technologists, and in fact a number of patents have been granted in this field.

Several claims have been made for groundwood brightness improvement by the addition of chemicals to a pulp grinder. Two U.S. patents have been issued to Hirschkind (1, 2) on the addition of hydrosulphite to groundwood pulp at the grinder. A Swedish patent (3) protects the addition of reducing substances including sulphites, to the grinding zone of a pulp grinder for the purpose of bleaching groundwood, while

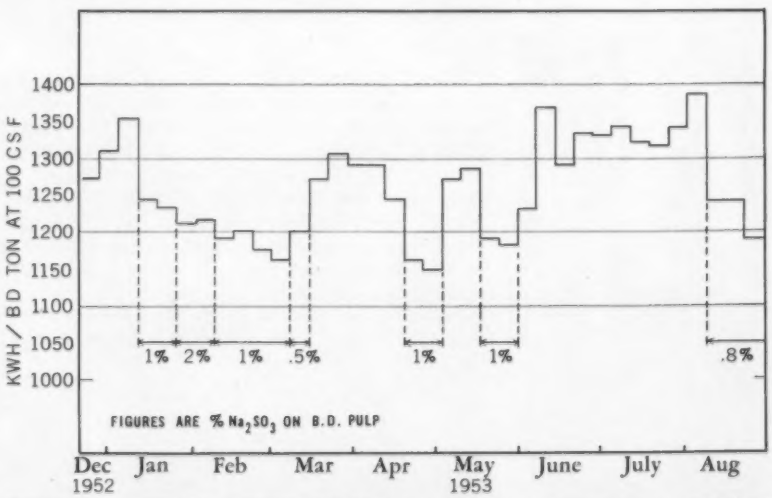

FIGURE 1—ENERGY REQUIREMENTS in grinding at Powell River. Effect of varying percentage treatments during mill trials.

Presented at the Annual Meeting of the Technical Section, Canadian Pulp and Paper Assn., held in Montreal, Que., January 25, 26, 27, 1956.

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a 1910 German patent (4) covers the addition of a bleaching agent, e.g., calcium bisulphite, by which it is claimed a strong, bright pulp is produced.

Two processes for the removal of resins from pitchy wood during grinding have been patented. In a Swedish patent (5), the resins are precipitated as barium salts and it is suggested that saponification or precipitation may be accomplished by addition of chemicals during the grinding process. A German patent (6) also covers the saponification of precipitation of resins during grinding by the use of alkaline hydroxides or carbonates or compounds which form insoluble resin soaps.

Several investigators have claimed higher grinder production and/or improved groundwood pulp strengths by the addition of chemicals to the grinding zone of a pulp grinder. An early German (7) patent protects the addition of alkalies to the grinding water by which the "wood fibers . . . separate easily . . . into long and fine fibers." Data published by Samyshkina (8) showed that small amounts of sodium hydroxide added to grinder showers reduced the energy requirements in grinding, increased slightly the grinder production, and improved the pulp strength.

One U.S. patent (9) covers the use of sodium chloride as a grinder shower additive. It is claimed that by operating the grindstone in brine, a longer, tougher fibre is produced, and production per grinder unit is increased.

As far as is known by the present author, none of the processes described in these patents, issued between 1908 and 1946, are presently in commercial use.

The experiments leading to the use of sodium sulphite as a grinder shower additive were started in Powell River in 1951. At that time, a serious shortage of wood species normally used for mill operations existed, and it became necessary to use such wood as Douglas fir, western red cedar, yellow cedar, cottonwood, and alder for groundwood pulp. Since some of these woods, alder in particular, produced a groundwood of low strength and others, particularly red cedar, produced a groundwood of low brightness, a research program was started to determine if, by the addition of some chemicals to the grinder pit, pulp quality, either strength or brightness, could be improved.

Table I—The Effect of Na_2SO_3 on the Grinding of Various Wood Species

MINIATURE GRINDER PULP CHARACTERISTICS CORRECTED TO 100 C.s.f.

Wood Species	% Na_2SO_3 on O.D. Wood		(a) Breaking Length (M)	(b) % Mullen	Tear Factor	(c) Brightness G.E. Units
Spruce (Sitka)	20	Untreated	4050	42.0	67.0	59.5
Picea stichensis		Treated	4050	42.0	68.0	60.5
Spruce (Eastern)	5	U.	3150	33.0	49.0	64.5
Picea Mariana		T.	3860	36.5	54.5	66.0
Balsam (Western)	20	U.	2500	21.0	46.5	58.0
Abies grandis		T.	2700	29.0	46.5	59.5
Balsam (Eastern)	5	U.	2710	32.0	49.3	62.5
Abies balsamea		T.	2950	34.0	51.0	66.5
Hemlock (Western)	20	U.	2450	23.5	39.0	56.0
Tsuga heterophylla		T.	2850	31.0	42.0	59.0
Douglas Fir	20	U.	2000	18.0	45.0	53.0
Pseudotsuga taxifolia		T.	2200	21.5	47.5	51.0
Red Cedar	20	U.	2200	19.0	37.5	26.0
Thuja plicata		T.	2800	24.0	41.0	31.0
Yellow Cedar	5	U.	2250	22.0	44.0	56.5
Chamaecytaris nootkatensis		T.	3250	32.0	54.0	57.0
Jack Pine (Eastern)	5	U.	2370	26.5	42.5	57.0
Pinus Banksiana		T.	2940	27.0	43.5	56.5
Cottonwood (Western)	20	U.	3100	31.0	56.0	56.0
Populus trichocarpa		T.	3200	30.0	54.0	61.5
Poplar (Eastern)	5	U.	1420	24.5	34.0	64.5
Populus tremuloides		T.	2720	29.0	43.5	68.5
Alder (Western)	20	U.	1100	10.0	19.5	61.0
Alnus rubra		T.	1450	13.0	19.5	72.0

(a) All tests determined according to Technical Section standards (b) % mullen = 2 (burst factor)
(c) Photovolt Corp. brightness meter, recorded in G. E. Units

Trials on a miniature grinder showed that the grinding of wood in the presence of small amounts of sodium sulphite had a beneficial effect on pulp strength and brightness. Later, in mill trials, it was demonstrated that the chemical reduced the energy required for grinding. The addition of sodium sulphite to the grinder showers was put into full practice in 1953 and has been in continuous operation since that time.

Part I of the present paper describes the development of the process in laboratory experimental grinder trials, individual mill grinder trials, and finally in full mill trials. Part II gives a description of the full-scale commercial utilization of the sodium sulphite processes in use at Powell River.

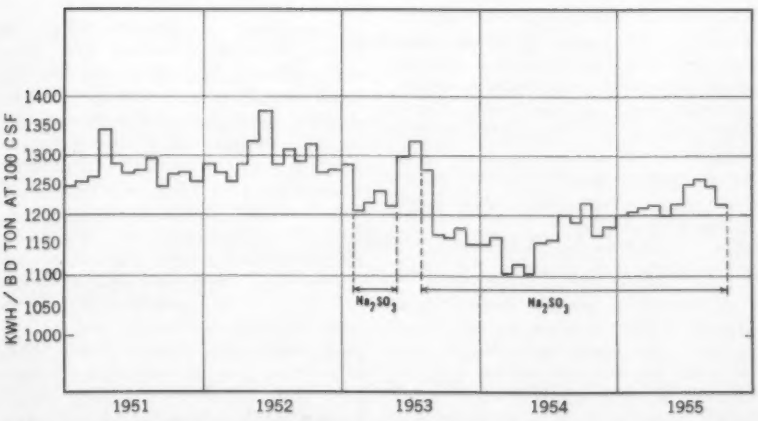

FIGURE 2—ENERGY REQUIREMENTS in grinding at Powell River 1951-1955 showing untreated and Na_2SO_3-treated periods.

PART I

Miniature Grinder Trials

In preliminary experiments, the effect of sodium sulphite on groundwood quality was studied on a miniature grinder (10) having a 12-in. diameter by two-in. wide stone and grinding 1⅜ in. square wood. The artificial stone (Norton 37C 54/6 07V) was burred, then conditioned previously to grinding by the brick-dust method (11).

a. Effect of Wood Species

In the first miniature grinder experiments, the chemical used was sodium sulphite-sodium bicarbonate in a 7:1 ratio. The pH of the solution was 9, the amount of chemical added was 20

Table II—The Effect on Western Alder and Hemlock Groundwood of Sodium Sulphite at Various Per Cent Treatments—Miniature Grinder Studies

SUMMARY OF RESULT AT 100 C.s.f.

Wood	% Na_2SO_3 on O.D. Wood	Breaking Length (M)	% Mullen	Tear Factor	Brightness G.E.
Alder	0	1100	10.0	19.6	61.3
	1.0	1380	14.0	19.6	63.5
	1.6	1400	14.5	21.6	67.5
	3.6	1500	13.0	20.6	69.5
	5.0	1500	15.0	21.5	69.5
	8.5	1300	13.0	18.6	72.8
	20	1400	13.0	18.3	73.0
Hemlock	0	2800	28.5	47.3	57.5
	2.5	2700	27.2	53.6	57.0
	5.0	2600	27.5	53.2	59.0
	10.0	3100	31.8	57.5	60.0
	16.4	2950	30.2	53.7	60.0

per cent based on the o.d. wood, and, as in all these miniature grinder experiments, the concentrated solution was run into the back of the pit. The effect of chemical addition upon a number of pulp characteristics for the various wood species tested is given in Table I.

It will be noted that of the western Canadian woods studied, the effect of the presence of $Na_2SO_3NaHCO_3$ in the grinding zone on pulp strength and brightness was most marked for Western hemlock, alder, and red cedar.

b. Effect of Percentage Treatment

A miniature grinder study was made of the effect of various percentages of sodium sulphite on groundwood quality. The percentage sodium sulphite treatment as used throughout this paper is expressed as pounds Na_2SO_3 per 100 pounds of oven-dry screened groundwood pulp. The results of a series of experimental grinder tests on Western alder and hemlock are shown in Table II. In general, the results indicated that the maximum effect was achieved with 5—10 per cent sodium sulphite.

c. Effect of 5 per cent Na_2SO_3 Treatment on Several Hemlock Samples

To determine the sensitivity of a given wood species to the action of sodium sulphite during grinding, five different hemlock samples were ground with sodium sulphite added to the grinder pit. Hemlock blocks were selected at random from the normal supply of wood to the groundwood mills, and representative sections were ground without treatment and with the addition of 5 per cent sodium sulphite. Each result given in Table III is the average of duplicate miniature grinder runs. All samples of hemlock tested responded to the action of sodium sulphite during grinding, although the degree of response varied quite widely.

d. Trials with Other Chemicals

A number of chemicals which might be expected to have some effect on groundwood strengths or brightness were tested on the miniature grinder. Some of the results obtained are shown in Table IV. It will be noticed that the alkaline chemicals, especially sodium hydroxide, resulted in a marked decrease in pulp brightness. The strength increases with sodium hydroxide are particularly interesting. The acid zinc hydrosulphite also reduced pulp brightness, but this was probably due to corrosion of the brass grinder case with consequent contamination of the pulp.

Single Commercial Grinder Trials

The results obtained on the laboratory grinder were sufficiently encouraging to warrant trials on a commercial grinder. Sodium sulphite was therefore added to one three-pocket mill grinder during normal grinding operations. In the groundwood mills, two three-pocket grinders are fed by one grinderman from the same wood supply, and for the mill grinder tests, one grinder was treated while the adjacent grinder was used as a control. To further eliminate wood variations, a supply of the type of wood under test was divided, block by block, into two parts, one part being fed to both grinders for a period before the chemical addition, the other part being fed to both grinders during the period that sodium sulphite was being added to the test grinder.

a. Treatment of Various Wood Species

A number of western species which are either used or might be considered for use in commercial groundwood process were treated with sodium sulphite (approximately 5 per cent on oven-dry pulp) for test periods of approximately one hour. Technical anhydrous sodium sulphite was dissolved in cold water and the concentrated solution was metered at the desired ratio in the back of the grinder pit during the trial period. The results of these mill trials, which are shown in Table V, in general confirmed the results obtained in the miniature grinder.

b. Treatment of Western Hemlock

Because Western hemlock is the predominant wood species used at Powell River, particular attention was given this species in the single three-pocket grinder trials. Six one-hour tests were made on hemlock, with percentage treatments ranging between 0.5 to 8.5 per cent. As shown in Table VI, pulp brightness and pulp strength were higher for the sodium sulphite treated pulps.

Long trials on Western hemlock were also made; in these trials the same method of dividing the wood supply and of feeding the sodium sulphite to only one grinder was used. Four tests were made, each of eight hours duration. In this case the sodium sulphite solution was prepared by sulphiting a sodium carbonate solution to pH 6.0 and was added at the back of the grinder pit. For a lower percentage treatment (1.3 per cent) than that used in previous trials, in each test the pulp brightness and pulp strengths were higher for the treated than for the control pulps. The results of these trials are shown in Table VII.

Full Mill Trials

Brightness and strength increases obtained in the single-grinder experiments encouraged an extension of the testing to a complete groundwood mill. Groundwood at Powell River is manufactured in three groundwood mills. In Mill 1 and 2 combined, producing 600 o.d. tons per day, 34 three-pocket, hand-fed grinders are driven by water wheels. In addition, two electrically driven magazine grinders are located in Mill 2. In Mill 3, producing 300 o.d. tons per day, 24 three-pocket grinders are electrically driven. Because treatment was more easily effected in Mill 3, and also because electric power readings could be obtained there, Mill 3 was selected for full mill testing, and all power figures reported are for this mill. It should be pointed out that it was not possible to obtain reliable power measurements in either the miniature grinder or the single commercial grinder trials.

Two very short trials were made in Mill 3 during the summer of 1952. These tests, in which commercial sodium sulphite was used, showed considerable brightening promise, and after a temporary plant for sodium sulphite manufacture had been constructed, mill trials were resumed. Between January and June, 1953, treatment in one or other

Table III—The Effect of Sodium Sulphite on Different Samples of Western Hemlock Miniature Grinder Treatment—5% Na_2SO_3 on O.D. Wood
SUMMARY OF RESULTS AT 100 C.s.f.

Wood Treatment	Hemlock No. 1 Normal	Hemlock No. 1 Treated	Hemlock No. 2 Normal Treated Compression Wood		Hemlock No. 3 Normal	Hemlock No. 3 Treated	Hemlock No. 4 Normal	Hemlock No. 4 Treated	Hemlock No. 5 Normal	Hemlock No. 5 Treated	Average Normal	Average Treated
O.D. lb./cu.ft. wet Wood density	26.3		28.0		20.2		28.9		24.3		25.5	
Drainage time sec.	25	26	15	16	26	31	21	22	20	21	21	23
Mullen %	27.0	29.5	14.5	21.0	27.5	35.0	30.0	31.5	25.5	27.0	25.0	29.0
Breaking length M	2750	2900	1850	2250	2700	3600	2950	3200	2600	2900	2550	3000
Tear factor	51.5	53.0	29.0	38.0	54.0	53.0	53.0	56.0	48.5	50.5	47.0	50.0
Bulk cc/gm.	2.4	2.5	2.6	2.6	2.6	2.4	2.4	2.5	2.5	2.6	2.5	2.5
% Longs (+24 mesh) (1)	13.0	14.0	3.0	4.5	17.0	17.0	7.0	10.0	10.5	13.0	10.0	11.5
% Fines (—170 mesh)	30.5	29.0	49.5	44.5	37.5	37.5	40.5	41.0	40.5	40.0	39.5	38.5
% Screenings (2)	2.7	2.5	0.9	1.0	5.9	2.9	1.6	1.2	1.3	1.7	2.5	1.9
Brightness G.E.	55.0	56.0	56.0	58.5	60.0	62.0	58.0	60.5	54.0	59.0	56.5	59.0

(1) Bauer-McNett fiber classifier (2) Laboratory flat screen—0.010 in slots

Table IV—Effect of Various Chemicals on Treated Hemlock Pulp Quality
MINIATURE GRINDER PULP CHARACTERISTICS CORRECTED TO 100 C.s.f.

Treating Chemical	NaOH		Na_2CO_3		$NaHCO_3$		NaCl		ZnS_2O_4	
O. D. Wood % Treat on	0.3%		2%		2%		5%		0.5%	
Treatment	Untreat.	Treated	Untreat.	Treated	Untreat.	Treated	Untreat.	Treated	Untreat.	Treated
Mullen %	27.5	40.0	32.0	35.0	32.0	33.5	25.5	25.0	28.5	27.0
Breaking length (M)	2800	4000	3200	3500	3200	3400	2450	2400	2800	2700
Tear factor	50.0	49.0	53.0	52.0	53.0	52.0	45.0	45.0	47.5	49.0
% Longs (+24 mesh)	10.0	15.0	16.0	15.5	16.0	12.5	10.0	9.5	11.5	10.5
% Fines (—170 mesh)	42.0	37.0	40.0	40.0	40.0	40.5	41.5	42.0	41.5	42.0
Brightness G.E.	57.0	43.0	58.5	52.5	58.5	53.5	54.5	54.0	57.5	55.5

Tab'e V—Effect of Sodium Sulphite on Various Woods—(Single Commercial Grinder)

Wood Species	Western Hemlock		Sitka Spruce		Douglas Fir		Red Cedar		Yellow Cedar		Red Alder	
% Na_2SO_3 added on O.D. Wood	0.93		4.6		5.1		4.75		5.9		4.1	
Pt. of Addition	Back of pit		Front pocket		Back of pit		Back of pit		Front pocket		Front pocket	
Condition of wood	Sound		Fairly good		Good small wood		Considerable teredo damage and rot		Reject lumber & teredo blocks		Good small wood	
Untreated or treated	Untr.	T.	Untr.	T.	Untr.	T.	Untr.	T.	Untr.	T.	Untr.	T.
Brightness G.E.	54.0	55.5	60.0	61.0	58.0	60.0	21.5	26.0	51.0	51.0	63.0	67.0
% Mullen (100 C.s.f.)	28.5	32.0	36.0	40.0	27.7	33.0	17.0	21.5	37.5	45.0	11.5	13.0
Breaking length (100 C.s.f.)	2800	2900	3300	3950	2550	2950	1900	2000	3350	3900	850	1050
Tear	50.4	53.6	70.0	72.5	50.6	60.2	29.1	37.9	60.9	61.5	7.2	9.7

Table VI—Effect of Sodium Sulphite at Various Percentage Treatments on Different Samples of Hemlock
SINGLE COMMERCIAL GRINDER—ONE-HOUR TESTS

Test No.	1		2		3		4		5		6			Average	
% Treatment Addition	7.25 Back of Pit		2.6 Back of Pit		8.6 Back of Pit		3.5 Front Pocket		0.93 Back of Pit		a) 0.5 b) 4.2 a) Back of Pit b) Front Pocket			4.2	
Point of Chem. Wood Condition	Good		Fair to good		Fair to good		Reject lumber		Good		Good				
	Untr.	Treat.	Untr.	Treat.	Untr.	Treat.	Untr.	Treat.	Untr.	Treat.	Untr.	Treat. (a)	Treat. (b)	Untr.	Treat.
Brightness G.E.	54.0	58.5	52.5	57.0	54.0	57.5	49.0	52.5	54.0	55.5	53.5	57.5	58.5	53.0	56.6
% Mullen (at 100 C.s.f.)	25.0	29.5	26.5	27.5	31.5	35.0	32.0	35.5	28.5	32.0	32.0	33.0	34.0	29.3	32.2
Breaking length (M) (100 C.s.f.)	2650	2900	2400	2600	2850	3350	2900	3250	2800	2900	2750	2900	3000	2730	2985
Tear factor	51.2	51.0	44.2	45.5	52.5	59.5	62.1	64.1	50.4	53.6	58.0	58.8	61.2	53.2	55.7

Table VII—Effect of Sodium Sulphite Treatment on Different Samples of Hemlock

SINGLE COMMERCIAL GRINDERS—8-HOUR TESTS

Test No.	1		2		3		4		Average	
	Untr.	Treat.	Untr.	Treat.	Untr.	Treat.	Untr.	Treat.	Untr.	Treat.
% Treatment		1.70		1.08		1.26		1.11		1.30
Brightness G.E.	53.5	60.5	53.2	57.7	55.6	59.2	54.0	58.0	54.0	58.8
% Mullen (at 100 C.s.f.)	31.2	34.7	31.2	34.0	29.7	30.7	28.7	33.9	30.2	33.2
Breaking length (100C.s.f.)	3175	3375	3150	3475	2900	3000	2800	3300	3005	3285
Tear factor	53.9	63.0	54.3	58.8	54.7	59.5	56.1	62.6	54.7	61.0

of the groundwood mills was more or less continuous and here, for the first time, the power saving effected by the use of sodium sulphite became apparent.

The effect of sodium sulphite addition on the energy requirements in grinding for Mill 3 is shown in Fig. 1. These weekly figures are obtained from the recording kilowatt-hour meters and from the groundwood tonnage, which in turn is obtained from the weight of newsprint produced. All values are corrected to 100 C.s.f. freeness by a standard curve.

The effect of sodium sulphite on energy requirements is clearly shown in Fig. 1. Treatment at 2 per cent did not appear more efficient at reducing power than 1 per cent treatment, while treatment at 0.5 per cent appeared to save less power than at 1 per cent. The mean power saving for the mill trials was 8.1 per cent. This important power saving is discussed in further detail in Part II below.

For a two-week period, the concentrated (18 per cent) sodium sulphite was metered directly into the back of each grinder in Mill 3, but this method of addition was not found to be any improvement over grinder shower addition as regards energy requirements or pulp quality, and was far more difficult to control.

During the mill trials decker pulp from the treated Mill 3 had a mullen strength 0.5 points higher than the pulp from the untreated Mills 1 and 2, while the same mullen strength increase was found in Mills 1 and 2 during a five-week period of treatment there (all figures at constant freeness). Tearing strengths of the treated pulps, however, showed no particular change with treatment.

Pulp yields were determined by comparing the solids content of the water drained from pulps sampled in treated and untreated mills. In these yield determinations normal wood solubles were determined on pulp from untreated grinders, with a correction applied for dissolved material introduced in the shower water. The total solids in the filtrate from the treated pulp, also corrected for shower-water solubles, was determined, this material was ignited, and the resulting ash was assumed to be Na_2SO_4 plus normal wood soluble ash. The results of several determinations made on daily samples during periods of 1 per cent and 2 per cent sodium sulphite treatment, are given in Table VIII.

Table VIII—Yield Determinations on Sodium Sulphite Treated Groundwood During Full Mill Trials

% Na_2SO_3 on O.D. Pulp	% Dissolved Organic Material on O.D. Pulp		Yield Change with Na_2SO_3 Treatment
	Treated Mill No.3	Untreated Mills Nos. 1 and 2	
1	1.32	1.87	+0.55
1	1.55	1.40	—0.15
1	1.22	1.53	+0.31
2	2.33	2.02	—0.31
2	2.41	1.39	—1.12
2	2.32	1.65	—0.65

PART II

The Addition of Sodium Sulphite to the Grinder Showers as Presently Practiced in Powell River

The process has been tested in controlled individual groundwood mill trials over a six-month period as described above and by two and one-half years of continuous use in Powell River's three groundwood mills.

Sodium sulphite at 0.7 to 0.8 per cent based on oven-dry screened groundwood weight is added to the grinder shower water. The addition of this amount of sodium sulphite to the grinding zone results in a reduction in unit energy consumption during grinding and an increase in production per grinder unit at constant freeness and pulp strength, together with an increase in pulp brightness.

The sodium sulphite solution may be added to the grinder by any method which will result in the chemical being carried up into the grinding zone. It has been proven most convenient to meter the prepared sodium sulphite solution at 18 per cent concentration into the grinder shower water feeding directly to all grinders.

The sodium sulphite used may be either purchased or manufactured at the mill. At Powell River the sodium sulphite is prepared from soda ash. Because the constituents of the prepared solution vary with pH, 1.19 pounds of sodium sulphite is arbitrarily assumed to be manufactured from 1.0 pound of soda ash. The concentrated sodium sulphite solution is prepared in a Pease-Anthony cyclonic scrubber* which is fed by the exhaust gas from the sulphite-mill Jenssen towers. Commercial soda ash is dissolved continuously in the sodium sulphite solution and is pumped

(Continued on page 37)

*The design for the scrubber was provided by the Chemical Construction Corp. of New York.

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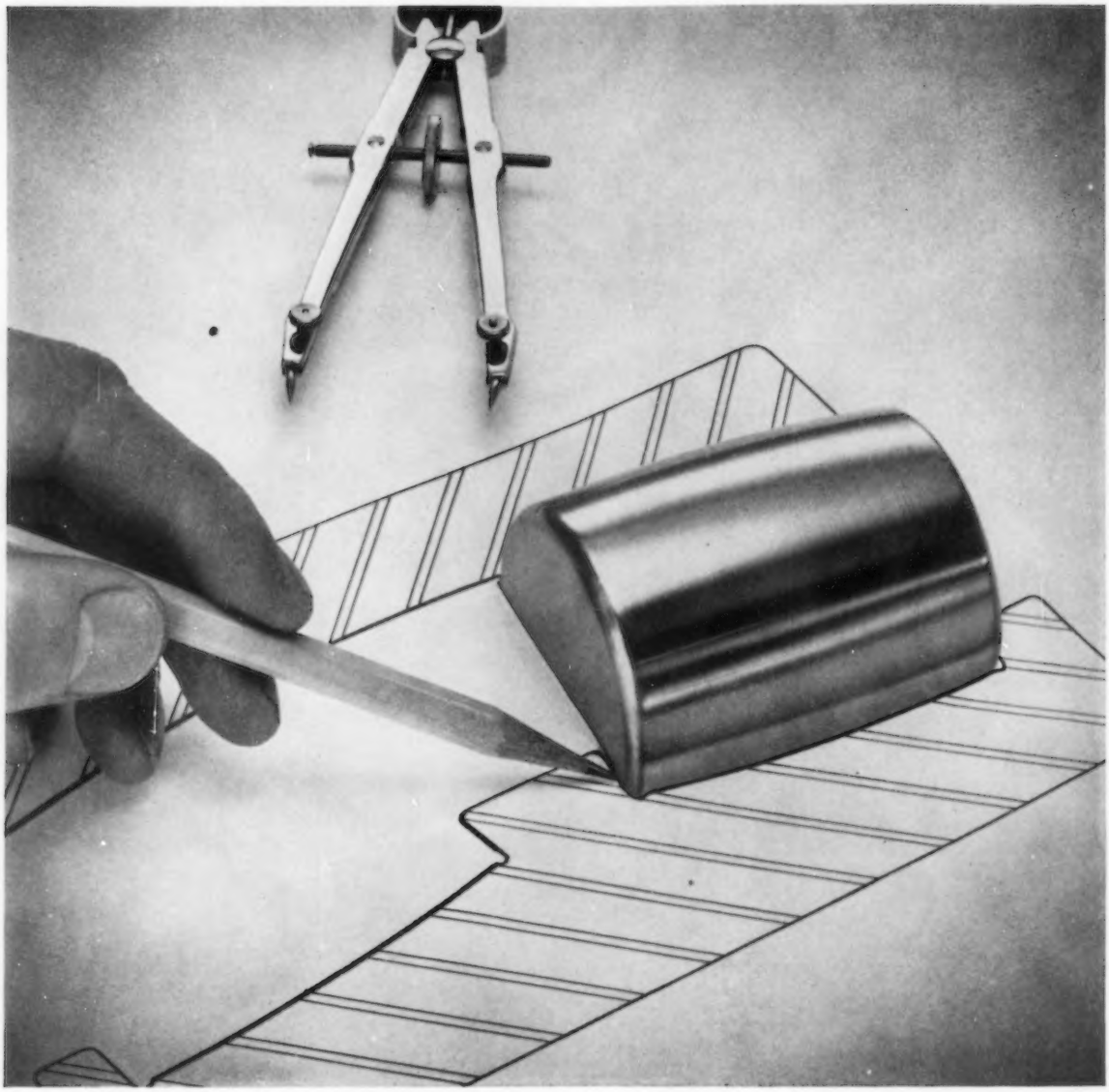

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to the scrubber where the carbonate reacts with the exhaust sulphur dioxide from the towers to form more sodium sulphite. The concentrated solution at pH 6.5 to 7.0 is pumped to storage in the groundwood mills, and from there is metered into the grinder shower lines on the basis of the number of grinders operating.

The cost of 0.8 per cent sodium sulphite treatment is presently 42 cents per ton of oven-dry screened groundwood or 32 cents per ton of newsprint, based on a soda ash cost of $51 per ton delivered to the sodium sulphite plant.

The process has given reserve capacity to an overloaded groundwood mill, and during prolonged periods when power has been limited the use of sodium sulphite has permitted newsprint production to be maintained at a level which would otherwise have been impossible.

An indirect but important advantage of the process is that by scrubbing the Jenssen tower exhaust with sodium carbonate, the gas nuisance in the municipality has been almost entirely eliminated.

Effect on Energy Requirements for Grinding

During the controlled mill trials with sodium sulphite, and subsequently, when full mill treatment was started, it was found that the energy requirements per ton of groundwood were reduced. The results are shown in Fig. 2, where the monthly average kwh. per o.d. ton figures from 1951 to 1955 have been plotted; all values have been corrected to 100 C.s.f. pit freeness.

An analysis of the data available has shown that the mean power saving for the two and one-half years of full mill treatment has been 8.75 per cent with 95 per cent confidence that the power saving is between 7.60 per cent and 9.90 per cent. During this period the total groundwood mill production at constant pulp freeness and strength was maintained at a level which, for extended periods, would not have been possible without the use of sodium sulphite. However, the production per grinder unit was restricted by the fact that at Powell River nearly all groundwood pulp is produced on three-pocket, hand-fed grinders, and there is a limit to the amount of wood which a grinderman can feed to the grinders per shift.

It should be emphasized, however, that for a constant power input per unit grinder, constant freeness and pulp strength, and no limitations on the rate at which wood can be fed to the grinders, it should be possible to convert the full power saving into increased production per grinder unit.

"Addition of sodium sulphite at the grinder showers has increased pulp brightness, reduced power consumption and increased store production."

Effect on Pulp and Newsprint Brightness

All preliminary experiments with sodium sulphite treatment at the grinders indicated that its use resulted in an increased groundwood brightness. The controlled mill trials established that the use of 0.8 per cent sodium sulphite gave a brightness increase on the grinder pit groundwood of 2.5 points G.E., that is, the brightness increased from 53 to 55.5 G.E. Because of the nature of Western hemlock, there is normally a decrease in groundwood brightness between the grinders and the finished paper.

For a period of one year where 0.8 per cent sodium sulphite was used at the grinder showers and the zinc hydrosulphite normally used was discontinued, the average newsprint brightness was 52.0—52.5 G.E. The demand for a substantial newsprint brightness increase made it necessary to return to zinc hydrosulphite brightening, and a double brightening system has been in use for the last year. Sodium sulphite at 0.8 per cent is added to the grinders, and zinc hydrosulphite at 0.4 per cent is added immediately after. With fairly good washing of the treated pulp, newsprint brightness has been raised to 54.5—55.5 G.E.

Effect on Groundwood Pulp Strengths

In the initial work on the miniature grinders and in single commercial grinder trials the addition of 1 per cent sodium sulphite (based on oven-dry wood weight) to the grinding zone resulted in an increase in mullen of 10 to 20 per cent and in tear of 5 to 10 per cent.

However in the full mill trials, in which one 300-ton per day groundwood mill using sodium sulphite was compared to a 600-ton per day control mill, there was no definite increase in pulp strength resulting from the chemical treatment at the grinding zone. Because all groundwood pulp at Powell River, since August, 1953, has been sodium sulphite treated, there has been no basis of comparison between treated and untreated pulp. During this period, however, mill groundwood strengths have fluctuated within the limits normally found at Powell River, and it can be assumed that any groundwood strength increase resulting from the use of sodium sulphite has been slight. No explanation has been found for the failure to obtain on a full mill-scale the same results that were obtained in the laboratory and in single mill grinder trials.

Effect on Pulp Yield

During the miniature grinder trials and the controlled mill trials, an effort was made to determine the pulp yield from treated and untreated wood. This was done by determining the organic material in the pulp filtrate. The results from a number of such determinations during the mill trials showed a small yield loss in some cases and a small yield gain in others. For both 1 and 2 per cent sodium sulphite treatment, in one groundwood mill the yield loss averaged 0.2 per cent.

It is not considered that this indirect measure of the effect of sodium sulphite on pulp yield is accurate, and was used mainly as a guide to indicate the general magnitude of any yield change. A more accurate measure of the effect of sodium sulphite usage on pulp yield could be obtained only after a long period of continued full-mill use, and this was done by comparing the amount of pulp produced per unit volume of wood to the groundwood mill during sodium sulphite use with the same value during comparable periods when no chemicals were being fed to the grinders.

For the eight-month period preceding the use of sodium sulphite in all groundwood mills, the average unscreened pulp production per rick was 0.437 o.d. tons, while during the first year of treatment the comparable figure was 0.438 o.d. tons per rick. Screened pulp yields per rick during the same periods were in equal agreement. All of the data available indicate that any effect which sodium sulphite may have on groundwood yield is well within the limit of error of yield measurements.

Effect on Groundwood Mill Operation

No changes were required in normal groundwood mill operation in changing to sodium sulphite treatment. The artificial stones in use at Powell River have not been affected by the prolonged use of sodium sulphite, and burring fre-

quency is the same or has decreased slightly. Grinding pressures and pulp freeness values have continued normal, and screening operations have remained unchanged. For 0.8 per cent sodium sulphite treatment with a pH 6.5 chemical solution, pit pulp increased in pH to 5.5 from an untreated value of 4.6.

Effect on Paper Machine Operation

During the initial mill trials, sodium sulphite treated groundwood was used for a period of three months on the two fastest paper machines at Powell River, No. 7 running at 1,550 f.p.m., and No. 8 running at 1,600 f.p.m., with no adverse effect on machine production, speed, or efficiency, or on steam consumption or per cent sulphite. During the first few days of treatment there were indications of an increase in the incidence of slime breaks, possibly caused by a cleaning action on the stock lines of the higher pH groundwood.

In the two and one-half years of full mill treatment with sodium sulphite, no noticeable changes have occurred in paper machine operation which could be attributed to the chemical treatment. It is the opinion of some of the operating personnel that sodium sulphite treated stock acts slightly slower on the wire than untreated stock at the same freeness. No effort has been made to confirm this change in stock characteristics and in any case it has had no adverse effect on machine operation.

The paper machine headbox pH during the years when only zinc hydrosulphite was used ranged between 4.5 and 5.0. With sodium sulphite treatment alone the headbox pH was 5.0 to 5.5, but the increased pH did not adversely affect paper-machine operation.

Effect on Mill Corrosion

The concentrated sodium sulphite solution is manufactured at pH 6.5 to 7.0; within this pH range the solution contains mostly sodium sulphite, together with some sodium bicarbonate and bisulphite. In contact with the 18 per cent sodium sulphite solution, iron and brass pipes and fittings have a limited life, and type 316 stainless steel should be used. The storage tanks in the sodium sulphite plant are tile lined, but wood stave Douglas fir storage tanks are also used, and are considered to stand up well; transfer lines of rubber or black polyethylene hose have given good service. The scrubber in which the sodium sulphite is manufactured is constructed of type 316 and 317 stainless steel.

Because of the use at Powell River of zinc hydrosulphite as a groundwood brightening agent for so many years, firm data were not available for the effects of sodium sulphite on metal life generally throughout the mill compared with conditions where no chemicals are used. Data on wire life and from corrosion test spools indicated that 0.8 per cent sodium sulphite was less corrosive than 0.4 per cent zinc hydrosulphite. Limited data on experience at Powell River with no treatment, available from a brief period when neither chemical was in use, showed that the use of sodium sulphite leads to a slight, but not troublesome, increase in corrosion generally.

Because of the difficulty in assessing the many factors influencing paper machine wire life, it has been impossible to determine clearly the effect of the use of sodium sulphite in this regard but certainly any effect has been slight.

"The changes that take place within the wood during grinding in the presence of sodium of sulphite are not known. Some other chemical or some modification of the grinding process with chemical addition might result in a major improvement in pulp quality or reduction in power consumption."

Need for Further Research

The effect on pulp quality and on grinding variables of adding various chemicals to the grinding zone of a pulp grinder should undoubtedly receive further study. Certainly a number of questions remain unanswered in the use of sodium sulphite. For example, the mechanism by which sodium sulphite affects pulp quality is not clearly understood. It is believed that no yield loss occurs, or if there is a yield loss, it is quite small, and yet the changes in energy requirements would suggest that some degree of chemical pulping occurs.

The chemical changes that take place within the wood during grinding in the presence of sodium sulphite are not known, and because the function of the treating chemical is not understood, some chemical other than sodium sulphite, or some unknown modification to the grinding process concurrent with chemical addition might result in a major improvement in pulp quality or reduction in energy requirements for grinding.

Alkaline sodium hydroxide and sodium carbonate solutions were found to give good pulp-strength improvements in miniature grinder studies, but the pulp brightness was so low that this groundwood could not be considered for newsprint manufacture; work remains to be done in this field, either to overcome the brightness drop or to apply the technique where pulp brightness is not critical.

In miniature grinder and single mill-grinder experiments with sodium sulphite, pulp strengths were improved, but no such improvement was obtained when full mill treatment was started, and here too, is a field of investigation that might result in important benefits to the groundwood producer.

It is hoped that the present paper will stimulate interest in the use of chemicals to improve the quality of groundwood pulp or the efficiency of the groundwood process, and will lead to increased research to these ends.

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PAPER PEOPLE

A. G. Strang

R. A. Perkins

Changes at Oregon Pulp & Paper

Oregon Pulp and Paper Co. has appointed Allan G. Strang as assistant pulp mill superintendent. Mr. Strang, until recently, was technical director at Columbia River Paper Mills, Vancouver, Wash., and was replaced by Hans Brune.

Mr. Strang is a graduate of the University of Washington and has had considerable experience in pulp mills. His immediate previous pulp mill experience before joining the company in the technical department was at Bowater's, Newfoundland, where he was employed in a supervisory capacity.

Roderick A. Perkins has been named technical director of the mill at Salem, Ore. Mr. Perkins comes to the company from Bergstrom Paper Co., where he was employed in the technical department.

H&W Organizational Changes

Several organizational changes affecting the Hollingsworth & Whitney plant of Scott Paper Co. at Waterville, Maine have been announced.

Darcey B. Wilkinson has been appointed regional operations manager. Mr. Wilkinson has been with Scott Paper Co. over 30 years. He was divisional manager in retail sales and industrial sales, personnel director for the company, plant manager successively at Marinette, Wis. and Fort Edward, N. Y., and most recently administrative assistant to H. F. Dunning, vice-president.

The region will ultimately cover Winslow and Madison, Maine; South Glens Falls and Fort Edward, N. Y.; Hoboken, N. J.; and Chester, Pa.

The Madison plant will be managed as a separate producing unit and Henry Grabowski has been appointed plant manager of the Madison operation. Mr. Grabowski will move to Madison from Oconto Falls, Wis. He has been with Falls Power and Paper Co. since 1948 and with Scott Paper Co. since 1951. He has successfully held a number of positions at Oconto Falls including technical control director and pulp mill superintendent.

Robert Timmins, presently paper mill process control engineer, has received a special assignment at technical assistant to the production manager. Mr Timmins' first assignment in his new capacity will be assisting the pulp preparation superintendent and will act as assistant superintendent. Starting work at the local plant as senior clerk in the research department, Mr. Timmins held positions in the paper mill and technical department before assuming the position of process control engineer.

Donald Maheu will assume the responsibilities of process control engineer during this period. Mr. Maheu started work at the plant in 1954. He held the position of special project engineer at the time of his new assignment.

Recent transfers to the Paper Mill supervisory force include Daniel G. Embon to the position of assistant paper mill superintendent and Daniel L. Hayes to paper mill shift supervisor.

Mr. Embon started in 1934 in the Chester mill as a third hand and progressed through to paper mill shift supervisor. In June of 1953 he was transferred to the Fort Edward, N. Y., mill as a divisional manager.

Mr. Hayes started in the Chester paper mill as a third hand. He moved to machine tender and was promoted to paper mill personnel assistant at Chester last year. He held that position at the time of his transfer to Winslow.

B. A. Gaffney

Promoted to General Plant Mgr. at New Haven

The New Haven Board & Carton Co. has appointed Bart A. Gaffney, who has been with the company since 1943, general plant manager.

Mr. Gaffney has held positions in the company as production planning manager, quality control manager, and most recently has been assistant general plant manager. He has been very active in the Folding Carton Industry since 1933. He is an associate member of the Packaging Institute, a member of TAPPI and a senior member of the American Society for Quality Control.

Hammermill Promotes Anderson

Carl L. Anderson has been named assistant paper mill superintendent of the Hammermill Paper Co., Erie, Pa. He had previously been technical-coordinator of material preparation.

Mr. Anderson is a graduate of the New York College of Forestry. Following service with the Armed Forces, he joined the Hammermill organization in 1946, as a chemist in the mill's technical division.

J. Corbin Joins Adam's Staff Within St. Regis

Joseph Corbin, pulp and paper development engineer with the central technical dept. of St. Regis Paper Co. was recently transferred to the staff of William R. Adams, vice-president in charge of manufacturing for the company.

Mr. Corbin has spent considerable time on the use of hardwoods for groundwood at Sartell, Minn. and Deferiet, N. Y. mills of the company, and recently he completed a study on the grinding of poplar.

Mr. Corbin was graduated from the University of Maine with a B.S. degree in pulp and paper technology, and previously worked for the American Cyanamid Co. and Great Northern Paper Co.

M. H. Collet

Hans Brune

F. W. Kiendl

Joins Olin Mathieson

M. H. Collet has been appointed to the newly created post of transportation and procurement manager of the Forest Products Division, Olin Mathieson Chemical Corp. He will also participate in the planning and execution of an expansion program contemplated by the division. Mr. Collet had been president of Rigesa S.A., a Brazilian subsidiary of West Virginia Pulp & Paper Co., engaged in the manufacture of paperboard and shipping containers.

Before his transfer to Brazil, Mr. Collet was assistant to the vice-president of West Virginia Pulp & Paper Co. in charge of pulpwood and forest management. During World War II, he was chief of the pulpwood unit of the War Production Board following a career with the U. S. Forest Service.

Mr. Collet will join Olin Mathieson on May 1st with headquarters in West Monroe, La.

Promotions at National Gypsum

National Gypsum Co. has announced the following promotions among its paper mill personnel.

To operate the company's new paper board mill at Anniston, Ala., Fred L. Buchanan has been selected. Mr. Buchanan joined National Gypsum in 1950 and served as manager of its Kalamazoo, Mich. paper mill. Most recently he has managed the company's plant in Pryor, Okla. Succeeding him as manager of National Gypsum's Pryor mill is Arthur H. Costain. He joined National Gypsum in 1953 as manager of its Newburgh, N. Y. plant, a position which he held until his recent promotion.

National Gypsum's new plant manager at Newburgh, N. Y. is William H. Morea who joined National Gypsum as a management trainee in 1953. He has also served as a process engineer and most recently as assistant plant manager of the company's Kalamazoo, Mich. paper mill.

Tech. Dir. at Columbia River

Columbia River Paper Mills, Vancouver, Wash., has appointed Hans Brune as technical director. Mr. Brune graduated from the Royal Institute of Technology in Stockholm, Sweden, and comes to Columbia River from the Swedish Cellulose Co. in Sundsvall, Sweden, where he was superintendent of their dissolving pulp mill.

Mr. Brune relieved Allan Strang who was transferred to Oregon Pulp and Paper Co. as assistant pulp mill superintendent.

Named Comptroller Of Allied Paper Mills

George A. Littlefield has been appointed comptroller of the Allied Paper Mills Division of the Thor Corp., Kalamazoo, Mich. Mr. Littlefield comes from the Pomeroy Co., for which he was secretary and comptroller in New York City.

Previously he spent six years with the St. Regis Paper Co., five of which were as division comptroller in the Kalamazoo mills.

CHARLES H. LEACH, who has been appointed Secretary-Treasurer of the Glassine & Greaseproof Manufacturers Assn., and the Sulphite Paper Manufacturers Assn., Inc., succeeding Thomas J. Burke who is retiring after more than twenty-five years' service with both associations.

A&S Promotes Kiendl

Frederick W. Kiendl has been appointed assistant manager of the Flexible Packaging Div., Arkell & Smiths. Mr. Kiendl has been in the packaging field for over five years, and will continue to headquarter at Arkell and Smiths New York office at 500 Fifth Ave.

C-Z Promotes and Transfers Two to Antioch

Two promotions and transfers of Camas Crown Zellerbach employes have been announced.

Carl Johnson, assistant supervisor of production planning, will become production planning supervisor at the Antioch, Calif., division on July 1. Mr. Johnson has 28 years' service, all at the Camas mill.

S. M. "Sam" Purdy, assistant paymaster, is being transferred and promoted to the position of paymaster at the Antioch division. He will report for his new duties about August 1, when the new mill is readied for operation. He has 18 years of service at the Camas plant.

Changes at Merrimac

Merrimac Paper Co., Lawrence, Mass. has announced the following personnel changes: Joseph M. Theberge, who has been employed in the general laboratories for the past eleven years, has been appointed to the newly created post of Research and Development Engineer. Leo Landers, formerly of Brown Co., Berlin, N. H., has been named Beater Room Supervisor.

Morriss Named V.-P. Of Eddy Paper Corp.

Thomas E. Morriss has been appointed vice-president of the board and carton division of Eddy Paper Corp. and its affiliate, Kieckhefer Container Co.

DOW LATEX 512-R

Elastic adhesive helps prevent fractured folds . . . used in finest-quality coated papers

Want *finest-quality* coated stock that folds without flaking?

Printers report that nothing makes coated paper *fold* better, *look* better, *print* better—or have better *ink receptivity*—than coatings made with Dow Latex 512-R.

Dow Latex 512-R is always in good supply from three separate Dow production plants at Midland, Michigan, Freeport, Texas, and Sarnia, Ontario, and a fourth plant to be completed at Pittsburg, California.

Extensive technical experience and facilities are at your service. Call your nearest Dow office—or write: Plastics Sales Department PL 599Z, THE DOW CHEMICAL COMPANY, Midland, Michigan.

For machine, off machine, or size press—

Dow Latex 512-R is the adhesive with all these benefits:

1. Ease of formulation.
2. Latitude in choice of pigments and fillers.
3. Excellent starch and dextrin compatibility.
4. Outstanding pigment compatibility and mechanical stability.
5. Good stability in the presence of water-soluble salts.

you can depend on DOW PLASTICS DOW

Bacon Joins Westfield River

William P. Bacon was appointed to the sales staff of the New York Office, 405 Lexington Avenue, New York City, of the Westfield River Paper Co., Inc.

Mr. Bacon comes to Westfield River from the Continental Can Co. (formerly American Paper Goods Co.) of Kensington, Conn., where for the past six years he has been engaged in purchasing work.

The promotion of C. L. Reece from technical sales engineer to the sales staff as a representative for the New England area was also announced.

Mr. Reese has been connected for many years with the paper industry and before joining Westfield River was technical director and superintendent of the Whiting Paper Co. of Holyoke for 26 years. He is very active in TAPPI, serving at present as vice-chairman of the New England section.

The Westfield River Paper Co. has mills in Russell and Lee, Mass., and West Conshohocken, Pa.

Cronkhite Promoted by Southerland Paper Co.

Ivan Cronkhite has been named superintendent of the Southerland Paper Co. power plants of Divisions Three and Six. Mr. Cronkhite succeeds Lee Bunde who resigned March 31.

Mr. Cronkhite started with Southerland in 1950 as assistant chief engineer, coming to the firm from St. Regis Paper Co. He formerly was foreman of Division Six power plant.

W. H. Chisholm Heads Oxford Paper

William H. Chisholm, vice-president of Oxford Paper Co., has been elected president to succeed his father, Hugh J. Chisholm, who remains as chairman of Oxford. Rex W. Hovey, executive vice-president, has been elected vice-chairman of the Oxford board and a director of Rumford Falls Power Co., a wholly owned subsidiary of Oxford Paper.

Meiwald Leaves St. Regis For Parsons & Whittemore

Fred Meiwald, technical service engineer with the Central Technical Dept. of St. Regis Paper Co., left the company March 21 to accept a position as assistant to the president of Parsons and Whittemore.

During his service with St. Regis, he made several surveys. He was the editor of a series of booklets on equipment and operation facts for all St. Regis paper mills; also a survey of quality control departments of each mill.

New Officers for Philip Carey

Five management appointments were announced by Philp Carey Mfg. Co. of Cincinnati, maker of building and industrial products. They were H. Ross Barrett, executive vice-president; Earl C. Faulkner, vice-president, Western division; Clarence E. Howard, vice-president, Eastern division; Edgar A. Broadway, vice-president, Canadian division, and Edwin F. Ziegenhardt, controller.

Plaskett Joins St. Regis

Clyde A. Plaskett has joined the Carthage (N. Y.) mill branch of the central laboratory of St. Regis Paper Co. He is a plastics engineer.

He was previously employed as development engineer at the Fostoria, Ohio plant of the National Carbon Co., a division of Union Carbide and Carbon Chemical Co.

Joins Consolidated Water P.&P.

Herbert Kronholm has joined the Engineering Department of Consolidated Water Power & Paper Co.

New Flintkote Officers

Dennis J. McNamara has been elected a vice-president and controller, and William Feick, Jr., treasurer, of Flintkote Co.

FIRST OBER AWARD at the University of Maine has been presented to R. Bruce Arnold, of Houlton, Maine, (right) a senior in Mechanical Engineering. This award is provided by the Scott Paper Co., Chester, Pa., and carries a stipend to the student of $1,000 during his fourth and fifth years at the University while he is enrolled in the pulp and paper program. In addition, the University received $1,000 from the Scott Paper Co. in the form of unrestricted income. The scholarship was named in honor of John Larcom Ober (left), of the class of 1913, vice-president of the Scott Paper Co. for 19 years. The award is made annually to an outstanding junior in the College of Technology who intends to enroll in the Five-Year Program and enter the paper industry upon graduation. The selection is made by a student-faculty committee.

Personnel of Galena Mill

Supervisory staff of United States Gypsum's new paper mill at Galena Park near Houston, Texas has been announced as follows: C. C. Thiel is works manager of the new operation. D. E. Galbraith, M. C. Musgrave, Harry Klehn, E. C. Morrow, and W. L. Zeiss have been appointed quality, paper mill, plant engineering, personnel, and office superintendents, respectively. W. L. Jones is assistant plant engineering superintendent, and Kenneth W. Wagner is paper buyer.

Mr. Thiel, who has been with the Company since 1943, served previously as superintendent of the paper and felt mill at South Gate, and as works manager at Clark. He took over his new position at Galena Park after four years as production engineer—paper in the U. S. G. Chicago Office.

Mr. Galbraith, who was transferred from the Clark plant, has been with the Company since 1935. Mr. Musgrave, with the U. S. G. since 1941, was general foreman of the Clark plant, and more recently was superintendent of the felt and paper mill operation in the South Gate plant.

Mr. Klehn, a veteran of 35 years of service with the Company, came to Galena Park from the Jacksonville plant, where he was construction superintendent.

Mr. Morrow was supervisor of employment in the South Gate plant prior to his transfer to Galena Park. Mr. Zeiss was transferred from the Company's Jersey City plant, where he was office superintendent.

Mr. Jones joined the Company as an engineer in 1948, following graduation from Finlay Engineering College in Kansas City. Mr. Wagner also started with the Company in 1948. He became paper buyer in the North Kansas City plant in 1952, from which position he was transferred to Galena Park.

Hudson Names Kuhe V.-P.

Appointment of David B. Kuhe, former director of expansion and development for the Crossett Co., and more recently production manager of Crossett's new paperboard mill, as vice-president in charge of manufacturing of Hudson Pulp & Paper Corp. is announced. Mr. Kuhe will supervise production at Hudson's seven plants.

Mr. Kuhe started in the I.P. mill in Rumford, Maine, as chief chemist and managed several I.P. mills during the next 17 years.

He left International in 1941 to join Union Bag Corp. as general superintendent of its Savannah, Ga. mill and later served nearly five years as mill manager with the Keickhefer Container Corp., Plymouth, N. C.

Armstrong Syphon Scoop

provides Superior Dryer Drainage at any Speed

Better Heat Transfer . . .
Less Horsepower . . .
Fewer Repairs

In a 3-hour test on a 60" diameter, 168" face kraft paper dryer operating at 720 fpm, an Armstrong Syphon Scoop removed 110 gallons of condensate, while a stationary syphon removed only 25 gallons from an adjacent dryer closer to the wet end.

Obviously the 85 gallons of condensate remaining in the poorly drained dryer had no beneficial effect on heat transfer and greatly increased the horsepower to drive it. Cascading water in dryers is also a common source of breakage of stationary syphon pipes.

This field test confirms observations made in an open end test dryer in the Armstrong laboratory, as shown in the table below.

PERFORMANCE COMPARISON—Dryer Drainage Devices*			
	Slow Speed up to 500 fpm	Medium Speed up to 900 fpm	High Speed over 900 fpm
Stationary Syphon	GOOD	POOR	POOR
Spiral Revolving Scoop	GOOD	POOR	POOR
Revolving Syphon	POOR	FAIR	POOR
Armstrong Syphon Scoop	GOOD	GOOD	GOOD

**NOTE: Speeds shown are approximate and results would vary depending on dryer and rate of condensation.*

Ordinary drainage devices permit a rim of water to build up to a depth of as much as ½" around the inside of a dryer shell. With an Armstrong Syphon Scoop the rim of condensate cannot exceed 1/16" in depth. And, at speeds below rimming, the generous scoop removes condensate as fast as it accumulates in the bottom of the dryer. As a result, heat transfer is not impaired, horsepower requirements are reduced and there is no maintenance problem.

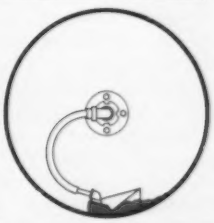
For complete information on how to improve dryer drainage, write to Armstrong today.

NEW . . . BULLETIN FREE ON REQUEST

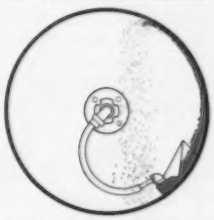
Bulletin No. 350 gives complete details of the Armstrong Syphon Scoop, describes performance on test dryer, gives physical dimensions and capacities, describes principle of operation and contains list of satisfied users. Send for yours today.

● View of Armstrong Revolving Syphon Scoop in open test dryer at Armstrong Laboratory. Photo taken at 1/1000 second. Water is supplied to dryer through pipe shown. Performance of Syphon Scoop can be observed at all speeds.

Drawing at left shows correct proportion of Syphon Scoop to 5 ft. dryer.



● **SLOW**—view into test dryer operating at 240 fpm with Armstrong Syphon Scoop, starting with pool of water at bottom. Water input rate is 2370 lbs. per hour. In operation, the Syphon Scoop removes water as fast as it enters test dryer.

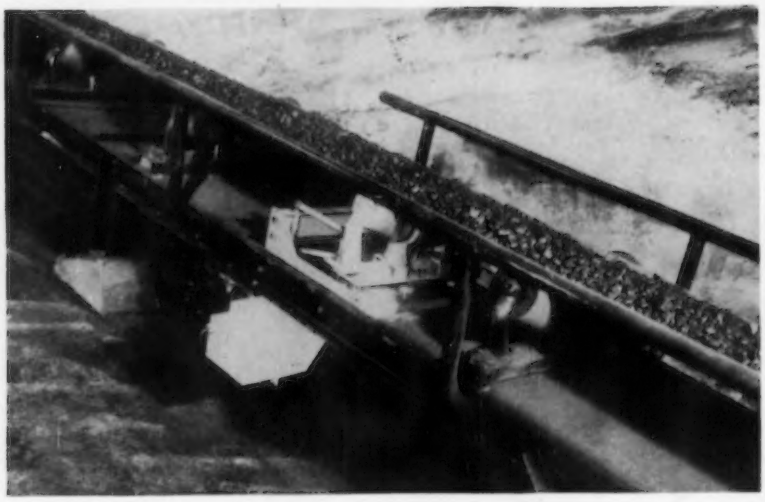


● **FASTER**—Speed of the dryer has carried the water up the side, but the Syphon Scoop works just as effectively as if the water were at the bottom. There is no build-up of water load to cause costly increase in drive horsepower required.

● **FASTEST**—water has rimmed completely around inside of dryer. This "skin" of water will never exceed 1/16" thickness because there is a 1/16" restriction between the Syphon Scoop and the dryer shell.

ARMSTRONG MACHINE WORKS
818 Hoffman Street, Three Rivers, Michigan

NEW EQUIPMENT AND SUPPLIES



Continuous Weigher Is Lightweight, Compact

A new alloy, which remains unaffected by temperature changes through a range of some 200 degrees, is the key to a recently developed weighmaster, the product of Commercial Products Div., Bell Aircraft Corp., 701 Seneca St., Buffalo 10, N. Y. Named Electro-Way, the device has several useful functions. In addition to weighing bulk goods as they pass over a conveyor belt system, it can also prevent overloads, improper blending of various ingredients, and choke-ups in bagging or mixing machines. The unit automatically records all weights measured.

The main advantage of the development over previous continuous weighing systems is said to be its accuracy despite extreme temperature variations, machine vibration, sudden changes in load, or the presence of dust and dirt. The unit is considerably smaller, lighter in weight, and more compact than other similar units.

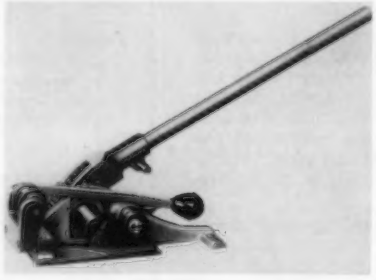
Complex beams, balances and mechanical linkages are eliminated in favor of a single, large spring, made of special alloy. Because this material is a constant modulus alloy, temperature compensating devices are not needed for maximum accuracy.

The product's pick-up consists of a set of rollers over which the load belt passes. The rollers, in turn, bear upon the weight spring. An electronic device converts the spring's mechanical motion into an electronic signal. The entire unit is mounted on the conveyor frame and requires no superstructure.

Measuring equipment can be located remotely, if desired, the manufacturer points out. Measurements are displayed on a veeder-root or similar counters, recorded on 24-hr. charts, or both.

The unit can be set so that the conveyor will automatically stop when the counter registers a given total weight, or it can be made to deliver no more than a specified number of lbs. per hour. A combination of conveyors with the weighing device can adequately control proportioning operations.

The product itself weighs 350 lbs., and requires 115 volts, 60 cycles for operation.



Improved Tensiometer

Just a flick of the wrist will automatically cut off the excess strapping with this newly-improved tensioner. Manufactured by Allegheny Steel Band Co., Pittsburgh, Pa., and called Model DC 2600, the heavy duty tensioner is designed for use with ¾" x .028 to 1¼" x .035 steel strap. It works equally well on both horizontal and vertical surfaces.

Hard-Facing Material Eliminates Wear

A new nickel-chromium-boron-tungsten hard-facing material which provides parts, exposed to extreme conditions of vibration and/or heat, with a wearproof, corrosion-resistant surface is now available from Wall Colmonoy Corp., 19345 John R St., Detroit 3, Mich. Called Colmonoy No. 70, the product has a high tungsten content which hardens the matrix, giving it the improved qualities.

The product was originally developed to overcome fretting and fretting corrosion at temperatures of 1000 F and more on jet engine shafts, and is available as a powder for application by spray-welding, or as welding rod in 3/16, ¼, 5/16 and ⅜-inch diameters, for application with an oxy-acetylene torch flame.

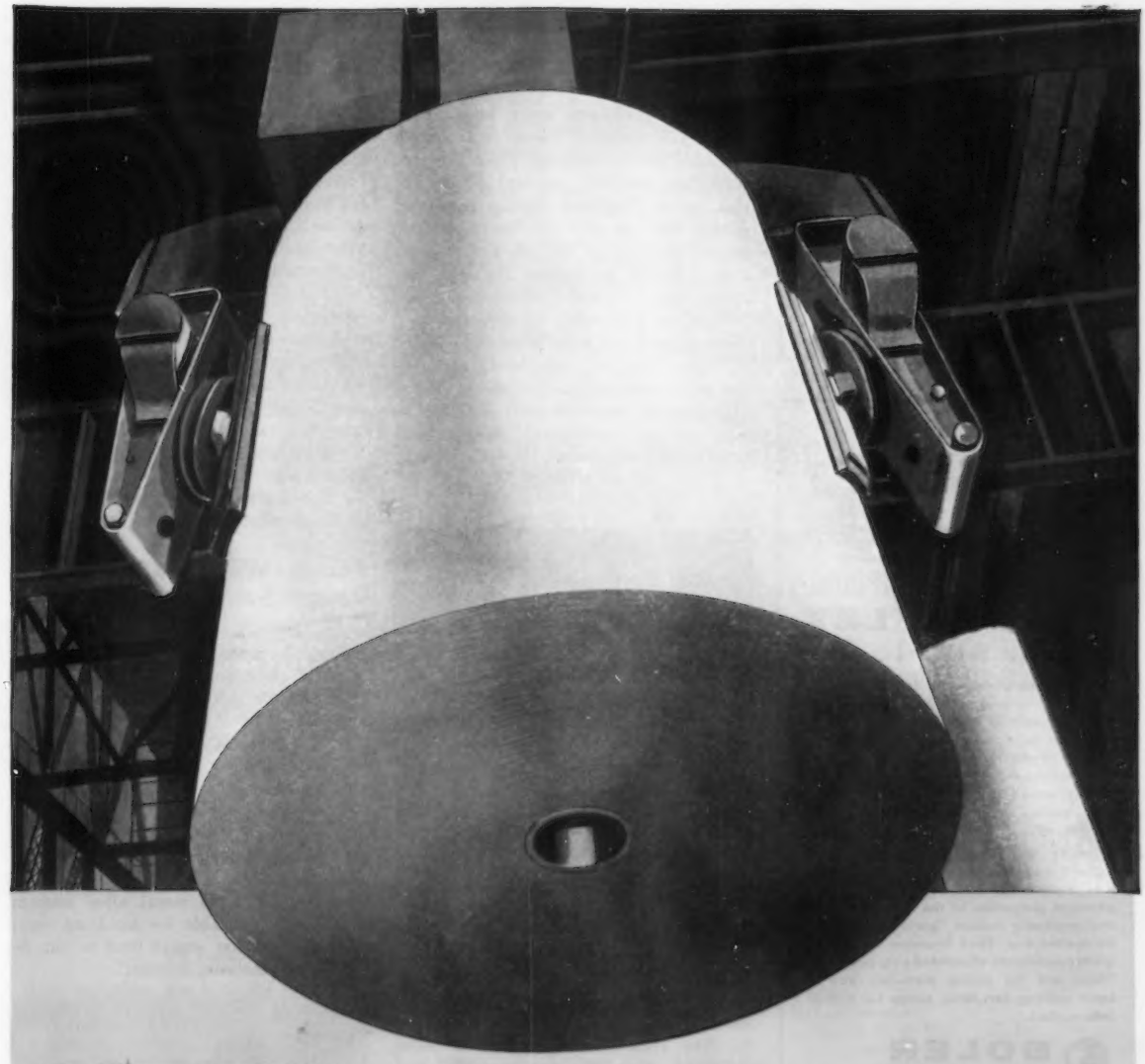
Open Motors for Splash-Proof, Enclosed Applications

Lincoln Electric Co., Cleveland, Ohio, announces its re-entry into the electric motor field. With a new line of motors which feature advanced electric motor design incorporating extruded plastic insulation.

Available in standard sizes from 1 to 40 horsepower, the motors are built in the open type frame and torque design B. The thermo-setting plastic insulation, unlike conventional varnish insulation which is applied by dipping, is molded into and around the stator windings. The motor stator is placed into a die and the plastic material is forced into the die under heat and pressure. The liquid plastic resin is extruded through the stator slots, completely covering the stator winding. After the plastic resin sets, the stator is removed from the die. The result is a motor winding that is encased in a rigid, tough and durable mass.

The plastic has demonstrated excep-

[Continued on page 46)



YESTERDAY . . . production limited by machine capacity

TODAY . . . an open end on production—and profits

Today, in mill after mill across the nation, new Puseyjones developments in papermaking machinery have lifted production ceilings, rolled back the profit-making horizons.

Setting the pace for modern, top quality, high speed, large tonnage production are a host of Puseyjones' developments, such as the "Rapi-Drape" Wire Changer to slash wire-changing costs . . . Flow Spreader, to spread stock uniformly . . . Simplex Press Part for control of nip pressure . . . Stream Flow Vat System for larger volumes of stock at lower consistencies . . . and the improved Steam Joint that permits repair or replacement without shutting down the Dry Part.

If your ceiling on production and profits needs raising, write or call Puseyjones engineers today.

THE SIGN OF TRADE MARK SUPERIOR QUALITY

THE PUSEY AND JONES CORPORATION

Established 1848 : : Builders of Paper-Making Machinery

Fabricators and Welders of all classes of Steel and Alloy Products

Wilmington 99, Delaware, U.S.A.

It will speed the reply to your inquiry to mention Paper Trade Journal.

CHAS. T. MAIN, INC.
CONSULTING ENGINEERS
Process Studies, Design, Specifications and Engineering Supervision
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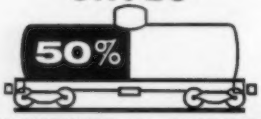


BY WEIGHT IN SHIPPING
EMULSOFLEX
for SIZING

The wonderful new Boler Emulsoflex Waxes are anhydrous: you don't have to waste money on the shipping of water. You add it in your own plant to these blends of the *right* (high melting point, hard microcrystalline) waxes and wax-soluble emulsifiers. You'll find them easier and more economical to store and handle, too.

Assuring uniform, non-fugitive sizing, Boler Emulsoflex Waxes improve lactic-acid resistance, have no effect on the physical properties of the finished sheet, and markedly reduce "percentage drop" on mullen test. They increase water and grease resistance of molded pulp products. These are the sizing materials you've been waiting for! Write today for further information.

BOLER
Petroleum Co.
121 S. Broad St., Philadelphia 7, Pa.

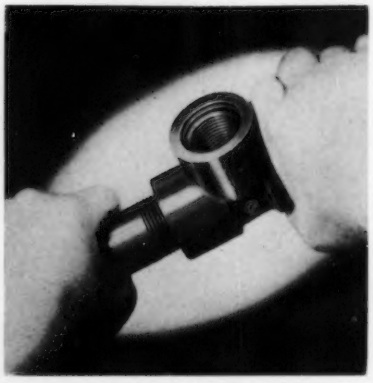
Paraffin Waxes • Microcrystalline Waxes • Parafflex Waxes • Nicolmelt Hot Melts • Laminants & Coatings for the Paper & Packaging Industries

tional resistance to chemical action, humidity, abrasive dust, lint, and oil vapor. In applications that formerly required a totally enclosed frame, the motor has performed much longer than the totally enclosed motor it replaced.

In addition to chemical protection, the insulation provides thermal protection. Hot spots, confined inside areas of motors that do not receive ventilation, are eliminated, as the plastic provides a medium for conducting the heat uniformly away from the wires.

Windings protected by the extruded resin cannot become loose by engine vibration. They are completely and permanently anchored to the stator frame.

Engines of the open type can also be used as a splash-proof motors, and totally enclosed motor.



Extruded P.V.C. Pipe

Riviclor, a new rigid pipe extruded from what is called a special high-strength polyvinyl chloride compound by American Hard Rubber Co., 93 Worth St., New York 13, N. Y., offers chemical resistance, high bursting strength, and toughness. Being unplasticized p.v.c., Riviclor is resistant to many chemicals. Impact strength is as high as 2.5 (Izod), and the material is said to remain tough and non-brittle even at sub-zero temperatures. This factor makes it easier to cut, thread and assemble without breakage or damage, and enables Riviclor pipe and fittings to withstand considerable mechanical abuse.

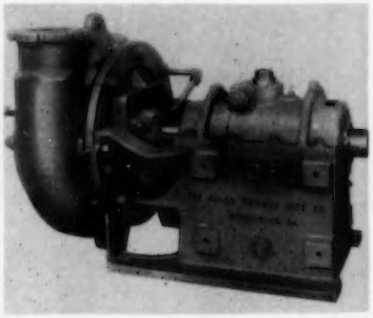
According to the manufacturer, the material is resistant to electrolytic corrosion, fungus, bacteria, etc., and can be recommended for underground lines as well as in-plant piping. It never needs painting, and the glossy smooth inside surface of this pipe reduces head loss and permits greater flow than equivalent size steel piping. Abrasion resistance is good.

Riviclor pipe and fittings are now available in sizes from ½ inch to 2 inch, standard or extra heavy wall construction (schedules 40 and 80 i.p.s.) Working pressure of the ½ inch extra heavy pipe is 490 p.s.i., and that of the 2 inch extra heavy pipe is 255 p.s.i., at 70 degree F.

Pumps Will Handle Rough Solids

An improved line of centrifugal-type pumps designed for transporting mixtures of abrasive materials such as ash, slag and fly ash from power plants is announced by Allen-Sherman-Hoff Co., 259 E. Lancaster Ave., Wynnewood, Pa.

The pumps are available in two types and many sizes. One type employs rubber, neoprene or other synthetic lining and is suitable for pumping fine solid materials, especially where resistance to chemical action is important. A second type employs hard metal alloy wearing parts and is suitable for handling sharp edged solids that would tend to cut the softer, non-metallic linings.



A small stream of clear water flows continuously through the clearance spaces between the rotating impeller and the stationery parts into the shell and suction eye of the impeller. The clear water effectively protects the shaft, stuffing box and suction seal from abrasive-laden water and thus eliminates possibilities of frictional wear and enlargement of running clearances between moving parts. It also forestalls recirculation of the solid-fluid mixture back to the suction eye of the impeller, thereby eliminating inefficiencies or double pumping.

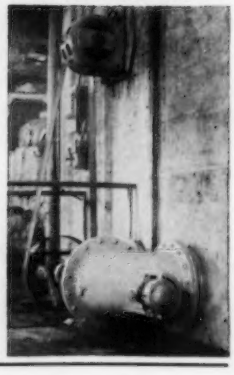
APMEW AGITATORS PROVIDE UNIFORM CONSISTENCY

500 tons daily, using 7½ H.P. is Circulated, Mixed, Equalized, and Uniform Consistency Provided.

200% Yearly is Usually Earned by APMEW Rapid Uniform Consistency Agitation. REQUEST INFORMATION.

Valuable Savings Effected by Decreasing Inventories with APMEW Standardized Machines.

THIRTY-FIVE APMEW STANDARDIZED PAPER MILL MACHINES use interchangeable, same size, long life roller bearings, same size large shafts and bearing housing are self aligning. 15 larger APMEW machines have interchangeable roller bearings.



APMEW, Inc., P. O. Box 1, Glens Falls, N. Y.

PRICES OF FIBERS

MARKET WOOD PULP

SECOND QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

	Delivered Basis		Varying Freight Allowances†		
	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$82.50/ 90.00	$82.50/ 90.00	§$83.00/ 86.00§	$90.00/ —	§$77.50/ 90.00
Kraft, Blchd.	152.00/155.00	155.00/ —	$155.00/ —		$155.00/ —
Kraft, Blchd. Hdwd.	150.00/ —		$137.50/ —		
Kraft, Semi-bleached	140.00/145.00	135.00/140.00	$137.50/140.00§	*140.00/ —	
Kraft, Unbl.	117.50/125.00	120.00/130.00	†125.00/130.00	125.00/145.00	
Sulphite, Blchd.	150.00/ —	150.00/ —	*150.00/ —	*150.00/ —	145.00/147.50†
Sulphite, Unblchd.	130.00/ —	130.00/ —	†130.50/ —	*130.00/ —	
Sulphite, Unb'l. Gl'sn		129.00/ —	†129.00/ —		
Soda, Blchd.	142.50/145.00	145.00/ —			

‡ F.o.b. Shipping Point. § On Dock Atlantic Ports. * Freight allowed.

NEW YORK RAG MARKET

New Domestic Cotton Cuttings

Delivered Mill Basis
PRICES NOMINAL

	Per 100 lbs.
No. 1 White Shirts	$15.25/$15.50
No. 1 Unblchd. Muslins	17.00/ 17.75
Blchd. & Unblchd. Underwears	17.00/ 18.00
No. 1 Light Silesias	7.25/ 7.75
No. 1 Light Blue Overalls	9.00/ 9.50
Percales	7.00/ 7.50
No. 1 Light Prints	5.75/ 6.25
Suntan Khakis	6.00/ 6.50
Cottonades	3.50/ 4.00
No. 1 Washables	3.00/ 3.50

Old Domestic Cotton Rags

(Prices to Dealers, F.o.b. Ship. Pt.)

	Per 100 lbs.
Mixed White	$3.00/$3.50
Cotton Pants & Overalls	2.25/ 2.50
Thirds and Blues, Repacked	1.75/ 2.00
No. 2 Roofing	26.00/ 27.00

COTTON LINTERS

Memphis Market

F.o.b. Oilmills

	April 10 Per 100 lbs.
Grade 1	n.a.
2	$9.10/ $7.70
3	7.00/ 5.80
4	5.25/ 4.20
5	3.75/ 3.05
6	3.00/ 2.75
7	2.75/ —

(2, 3, 4, 5, 6, 7: 1st cut—felting)

*Based on 73% cellulose.

Bagging

(Prices to Dealers, F.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny	$5.00/$5.25
Foreign Scrap Burlap	5.00/ 5.25
Heavy Wool Tares	6.50/ —
Foreign Manila Rope	6.50/ 6.75
Domestic Manila Rope	7.75/ 8.25
Domestic No. 1 Sisal Strings	4.25/ 4.50

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point - Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York April 16	Boston April 16	Chicago April 16	Los Angeles April 16
No. 1 Mixed Paper	— / 14.00	— / 16.00	17.00/ —	14.00/ —
No. 1 News	21.00/ —	21.00/ —	18.00/ —	14.00/ —
Overissue News	26.00/ 29.00	21.00/ 25.00	23.00/ —	14.00/ —
Mill Wrappers	25.00/ —	21.00/ —	20.00/ —	14.00/ —
Old Corrugated Containers	27.00/ 30.00	26.00/ 27.00	30.00/ —	19.00/ —
Super Resorted Kraft Paper	40.00/ 50.00	45.00/ 50.00	45.00/ —	45.00/ —
New Double Kr. Ld. Corr. Cuts	40.00/ 42.00	45.00/ 47.00	45.00/ —	35.00/ 40.00
(Semi-chem. medium)	45.00/ 52.50	47.50/ 52.50	50.00/ —	— / —
New 100% Kraft Corr. Cuts	55.00/ 65.00	55.00/ 65.00	75.00/ —	45.00/ —
New Br. Kraft. Env. Cuts	90.00/105.00	85.00/ 95.00	80.00/ —	60.00/ —
New Br. Kr. Bag Waste Prntd.	65.00/ 75.00	65.00/ 75.00	70.00/ —	60.00/ —
New Br. Kr. Bag Waste Unprntd	75.00/ 80.00	80.00/ 90.00	85.00/ —	— / —
No. 1 Groundwood Shvs.	45.00/ 50.00	35.00/ 45.00	40.00/ —	27.00/ 30.00
White Newsblanks	80.00/ 82.50	70.00/ 80.00	60.00/ —	65.00/ —
No. 1 Soft White Shvs.	90.00/100.00	80.00/ 85.00	80.00/ —	— / —
Hd. Whit. Shvs.	115.00/120.00	115.00/125.00	120.00/ —	105.00/ —
Hd. Wht. Env. Cuts	130.00/135.00	130.00/145.00	120.00/ —	120.00/ —
Col. Tab. Cards	75.00/ 80.00	75.00/ 77.00	65.00/ —	42.50/ —
Manila Tab. Cards, bales	100.00/110.00	95.00/102.00	95.00/ —	74.00/ —
No. 1 Col. Ledger	35.00/ 40.00	40.00/ 45.00	50.00/ —	32.50/ —
White Ledger	75.00/ 80.00	70.00/ 75.00	70.00/ —	50.00/ —
Mixed Book & Mag.†	28.00/ 29.00	30.00/ 32.00	25.50/ —	— / —
No. 1 Rep'd. Hvy. Books‡	33.00/ 35.00	33.00/ 35.00	37.50/ —	— / —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood. § Deld.

PRICES OF MATERIALS

Aluminum sulphate:		
cml bags, c.l. wks.	cwt.	$1.85 / —
iron-free, c.l. wks.	cwt.	3.55 / —
Casein, acid prec.:		
dom. sh. pt. c.l. (30 mesh)		30.00 /32.00
Arg. ex. dock, duty paid		22.25 /23.50
New Zeal., do.		26.00 /27.00
Caustic soda:		
c.l. wks. solid, 76%	cwt.	4.10 / —
flak. & grd. 400-lb. drums, c.l.		4.50 / —
liquid 50% tanks		2.80 / —
liquid 70% tanks		2.90 / —
China clay:		
dom. air-float, c.l. (Geo. Wks.)	ton	10.00
water-washed, lump, filler,	ton	11.00
coating	ton	17.60 /40.00
Imported, ex. ship	short tons	20.00 /35.00
Chlorine:		
single-unit tanks, works	cwt.	3.05 / —
multiple unit, 2-5 cars per yr.		3.92 / 5.12
Formaldehyde:		
USP, inh. dms. c.l. wks.	lbs.	.0675/ —
lcl., E. wks.	lb.	.072 /.0725
Lime:		
hydrated (bulk, c.l.)	tons	18.71 /20.21
Gum rosin:		
K, M, N, drums, c.l. Savan,	cwt.	8.20 / 8.30
Rosin size:		
70%, gum & pale grds., tank cars, south, sh. pt.	cwt.	7.24 / 7.28
Salt cake:		
dom. bulk, 100% anh. wks.	ton	28.00 / —
imp. f.o.b. Saskatchewan	ton	18.00 / {Cana. funds
Soda ash:		
light, 58%, bags, wks.	cwt.	1.80 / —
bulk	cwt.	1.50 / —
Sodium silicate, 40° Be.:		
tank-cars, wks.	cwt.	1.10 / —
drums, c.l. wks.	cwt.	1.45 / —
(47°) Be. WW.		
tank-cars, wks.	cwt.	1.75 / —
drums, c.l. wks.	cwt.	2.10 / —
Sodium peroxide:		
dms. c.l. E. of Miss.	lb.	.186
l.c.l. (same basis)	lb.	.191 / .196
Soybean, protein:		
chem. isol., wks. c.l. bags	lb.	.23 / —
Sulphuric acid:		
60° Be. cbys. c.l. wks.	cwt.	2.00 / —
l.c.l. wks.	cwt.	2.45 / —
tank-cars, wks.	ton	18.60 / —
Sulphur:		
crude, c.l. mines, contract,	long ton	26.50 / —
f.o.b. vessels Gulf	do.	28.00 /31.00
Sulphur dioxide:		
liquid, coml. cyl., wks.	lb.	.10 / .12
multi-unit cars, wks.	lb.	.0535/
Starches:		
corn, multiwalls, c.l. prod. plant:		
pearl	cwt.	6.39 / —
white, dextrins	cwt.	7.55 / 7.80
chlorinated	cwt.	8.15 / —
potato, Idaho, c.l. wks.	cwt.	6.00 / —
East, fr. all. 50 cents cwt.		
potato, Maine, f.o.b. wks.	cwt.	5.75 / —
Talc:		
domestic, sacks, (fibrous, grd.) c.l. wks., N.Y.	ton	27.00 /37.00
Titanium dioxide:		
anstase, c.l. deld. E. bags.	lb.	.22½/ —
l.c.l. deld.	lb.	.23½/ —
rutile, c.l. deld.	lb.	.26½/ —
l.c.l. deld.	lb.	.27½/ —

NEWS OF ASSOCIATIONS

To Honor Past-Chairmen

John D. Murphy, Chemical Paper Mfg. Co., Holyoke, Mass., Chairman of the Connecticut Valley Division of The American Pulp and Paper Mill Superintendents Assn., has invited all Past-Chairmen of the Connecticut Valley Division to attend the May 18, 1956 dinner meeting of the Division as his guests.

This meeting will be held at the Roger Smith Hotel, Holyoke, Mass. It will open the Roof Garden of the Hotel for the 1956 season.

N.P.B. Spring Meeting In Hollywood, Fla.

The Spring Meeting of the members of National Paperboard Assn. is to be held at the Hollywood Beach Hotel, Hollywood, Fla., on May 15 and 16.

General Membership sessions are scheduled for Tuesday and Wednesday morning. Meeting of the Board of Directors will be held Tuesday afternoon.

Tentative Program for Tech. Sec. CPPA Meeting

Manoir Richelieu, at Murray Bay, Que., will be the scene of the 1956 Summer Meeting of the Technical Section, C.P.P.A. Sessions will begin the afternoon of June 13 and will end Saturday morning, June 16.

The program will include the following topics:

Fundamentals of Specialty Steels
Applications of Specialty Steels
Coal Handling Equipment
Recent Development in Bark Pressing
Stock cleaning in Board Mills
Board Mill operating Problems
Moisture Control in Relation to Fine Paper Use Requirements
Moisture Measurement and Control
Stock cleaners for Newsprint Machines
Practical Application of Noise Abating Devices
Added Capacity for Black Liquor Evaporators
Odour Abatement in the Pulp Industry
Criteria for the Selection of Pulpstones
Blow Pit Washing
The Training of Instrument Mechanics
The Design, Maintenance and Operation of Soundproof Booths for Machine Crews
The "H" Factor—A means of Expressing Cooking Times and Temperatures as a Single Factor
High Yield Sulphite Pulping as practiced by Abitibi Power and Paper Company Limited
Cellulose as a Raw Material
New Fractionating Technique for Cellulose
New Stains of Fibre Classification
The G. E. Recording Turbidometer
Control of Sulphite Pulping by Time-Temperature Units

All reservations should be made through H. M. Costello, Canada Steamship Lines Ltd., Box 1000, Montreal, P.Q.

Empire Tappimen Will Hear About Synthetic Fibers

When the Empire State Section of TAPPI holds its annual convention June 7-9, special attention in the technical sessions will be given to new synthetic fibers in paper and to waste paper utilization. Horace Spencer (Knowlton Brothers) will head up the session on the synthetics's and Ralph Kumler (Waste Paper Utilization Council) is organizing the waste paper session.

Chairman of the Section William R. Willets (Titanium Pigment Corp.) will lead the convention, which is to be held at Whiteface Inn, Lake Placid, N. Y.

The waste paper session is scheduled for the morning of June 8 and will offer:

J. Wayne Morrow (Newton Falls Paper Mill) — "Mechanical Cleaning of Waste Paper Pulp."

Mortiner Stern (Federal Adhesive Corp.)—"Adhesives Involved in Waste Paper Utilization."

Walter O'Keefe (Robert Gair Co.)—"New Product Development in Fine Paper and Kraft and Its Effect on Board Production."

J. J. Forsythe (International Paper Co.)—"Shrinkage of Waste Paper During De-Inking."

The synthetic fiber discussion will take place during the morning of June 9.

A third session of the afternoon of June 8 will present:

J. Wayne Morrow, Chairman, "Junior Award Papers."

R. W. Sittner (General Electric Co.) "Helper Drives for Paper Machines."

Henry C. Smith (Fischer & Porter Co.) Subject unknown.

A full program of social events is scheduled for men and the ladies.

Convert Logs into HIGH-QUALITY CHIPS

with Carthage Log Barkers, Log Splitters, Log Chippers, Slab Chippers, Chip Screens

For Example:

CARTHAGE HYDRAULIC LOG SPLITTER quarters the log with one stroke — and ejects the log so that the machine is always clear for incoming logs. Simple, heavy-duty hydraulic controls with full safety features. Complete range of sizes for logs to 38" diameter and 8'6" length.

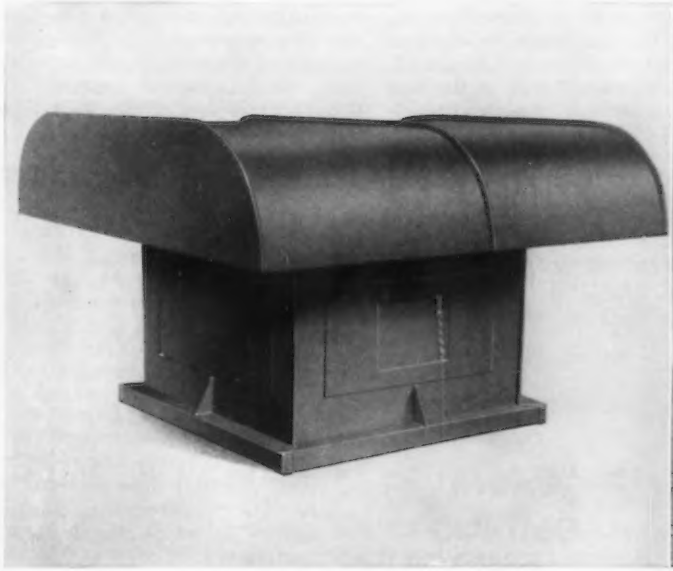
Write for Complete Information

CARTHAGE MACHINE COMPANY CARTHAGE, NEW YORK

"Buffalo" SKY-VENT ROOF VENTILATORS

CAPACITIES: 1,000 cfm through 250,000 cfm

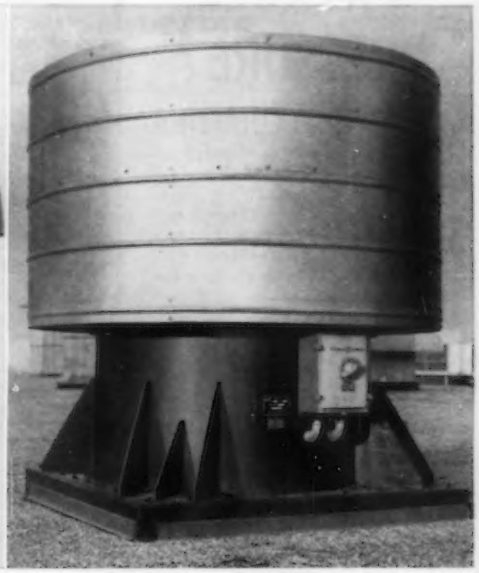
SIZES: 12" through 120"



Style "H" Sky-Vent

The Style "H" Sky-Vent head is made of heavy gage galvanized steel with integrally rolled stiffening flanges along its entire length and is internally braced with one-piece welded square hollow tubular frame. Hood design minimizes friction loss as air leaves unit.

The extra heavy galvanized steel stack with integral flanged curb plate has offset stiffening panels rolled into the side sheets and on larger sizes is further braced with one-piece welded square hollow tubular frame. Gravity, manual or motor operated shutters are available, mounted in the stack. Disconnect switch and internal wiring can be provided.



Style "V" Sky-Vent

Counterbalanced dampers open when fan starts, close by gravity over V-shaped trough at top of inner cylinder when fan is shut off. Heavy gage stack contains integrally welded gussets supporting motor and propeller fan. Outside gussets provide rigidity, minimize vibration. For easy installation, a flanged roof curbing plate is welded to the stack.

"Buffalo" high volume power roof ventilators are designed to ventilate large plant areas not adjacent to outside walls or where expensive and bulky duct work is impractical. This type of ventilation lends itself well to rearrangement of plant layout without consideration for the ventilating system.

The "Buffalo" Propeller or Axial Type Fan in the stack has all the strength, efficiency and smooth operation that characterizes the "Q" Factor* in all "Buffalo" Fans. Recently introduced, these new units are being adopted by many of the country's largest plants for removing hot air, fumes and fogs from large areas. Why not investigate? Write today on your company letterhead for Bulletin FM-1234 and other descriptive material.

The "Q" Factor — the built-in Quality which provides trouble-free satisfaction and long life.*

BUFFALO FORGE COMPANY

BUFFALO, NEW YORK

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

"Buffalo"

INDUSTRIAL EXHAUSTERS **BELTED VENT SETS** **PROPELLER FANS** **"E" BLOWERS - EXHAUSTERS**

PAYROLL PRESSURE?

try COST ACCOUNTING
your COUNTING COSTS

Then see how you can cut them 3 to 5 cents a ream with Stevens Automatic Sheet Counters and Pile Markers—Write for Bulletin No. 100—Or ask for a free demonstration in your mill.

stevens
CHARLES R. STEVENS, INC.
2017 SYLVANIA AVENUE
TOLEDO 13, OHIO

NORTON

Grinding Wheels
Pulpstones
Grinding Machines
Refractories
Porous Mediums
Non-slip Tiles & Aggregates
Norbide Products

NORTON COMPANY
WORCESTER, MASS.
Behr-Manning Division, Troy, N. Y.

NEWS OF SUPPLIERS

• BORDEN CO.'s Chemical Division announces that Donald A. Regnier and Errol M. Thompson have joined the technical staff of its Resinous-Reslac Department. Mr. Regnier will serve industrial customers of Borden's Chemical Division in the State of Ohio. He will operate from the Resinous-Reslac Department's plant at 3634 West 38th St., Chicago, Ill.

Mr. Thompson will work in the New England area from Resinous-Reslac's Peabody, Mass. plant.

• GENERAL ANILINE & FILM CORP. has appointed E. Rabun Swint manager, Executive Development for the Dyestuff and Chemical Division.

• FAIRBANKS, MORSE & CO., Chicago, has appointed J. S. Peterson as manager of Electronic Sales, Scale Division. Mr. Peterson will report to C. G. Gehringer, manager of the Scale Division.

Figures of the Week

PAPER PRODUCTION RATIO REPORT —American Paper & Pulp Ass'n. Figures

(Production as percent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

1956	Mar. 10 101.7	Mar. 17 103.9	Mar. 24 103.9	Mar. 31 101.5r	Apr. 7 98.7
1955	Mar. 12 97.3	Mar. 19 97.6	Mar. 26 97.6	Apr. 2 98.1	Apr. 9 97.2

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1955	93.6	96.6	97.9	98.0	99.3	97.4	85.5	96.2	93.8	101.2	100.6	94.0	94.9
1956	98.9‡	101.5‡	102.6‡										

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1949	1950	1951	1952	1953	1954	1955	1956
Year to Date	86.8	95.1	101.3	96.6	94.5	94.2	95.4	101.0
Year Average	83.7	95.8	98.0	88.6	92.3	91.6	94.9	

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

Note: In the above tables all the ratios shown are on the basis of a normal 6 and 7 day capacity.

PAPERBOARD OPERATING RATIOS†

COMPARATIVE WEEKLY SUMMARIES

1956	Mar. 10 100	Mar. 17 99	Mar. 24 98	Mar. 31 101	Apr. 7 94
1955	Mar. 12 95	Mar. 19 97	Mar. 26 95	Apr. 2 95	Apr. 9 95

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1955	92	95	96	94	97	97	84	99	97	102	101	92	96
1956	100	100	99										

† *Percents of operation based on "Inch-Hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Ass'n. Figures

ITEM	THIS WEEK ENDING Apr. 7, 1956	LAST WEEK ENDING Mar. 31, 1956	CUMULATIVE TO DATE Jan. 1, 1956 to Apr. 7, 1956
% Activity	94%	101%	100%
	Tons	*Tons*	*Tons*
Total Production	276,703	290,965	3 948,391
Liner	98,709	94,595	1,337,198
Corrugating Material	40.290	45.605	625,192
Chip & Filler Board	4,905	7,533	84,429
Total Containerboard	143,904	147,733	2,046,819
Folding	49,907	50.780	715,117
Set-Up	12,271	12,670	182,055
Special Food Board	26,633	24,465	318,405
Other	43,988	55,317	685,995
Total Boxboard	132,799	143,232	1,901,572
Total Orders	*Tons*	*Tons*	
Received	380,425	291.219	
Unfilled End of Week	647,160	546,994	

G. W. Hardaker

J. C. P. Taylor

• LOCKPORT FELT CO., has established an augmented sales program for the Southern U.S. area. The creation of a new Southern Sales Division coincides with the opening of the company's new mill at Starkville, Miss. George W. Hardaker, long-time southern representative for Lockport, has been appointed Southern Division sales and service manager. He will direct felt sales and technical service in the South and Southwest.

E. Paul Easton, who has been Lockport's sales representative in Mississippi, Tennessee, Arkansas and adjacent South Central States, will be associated with Mr. Hardaker in a sales capacity. Mr. Easton will continue to serve those areas. Also assigned to the newly created Southern Division will be Mr. Hardaker's son, Albert Hardaker, who has re-joined Lockport's sales staff after four years of service with the United States Navy.

Dedication of the new Starkville, Miss., mill will be held on April 27 and 28.

• JEFFREY MANUFACTURING CO., Columbus, Ohio, has appointed J. C. Price Taylor manager of Crusher and Pulverizer Sales. He had been sales engineer for that division in the East and has been with the company twenty years. Frank J. Hrabley has taken a position in Jeffrey's Advertising Department. He will have charge of direct mail activities.

• UNITED CARBON CO., Charleston, W. Va., has decided to withdraw from the business of manufacturing printing inks, which it has been carrying on through its wholly-owned subsidiary, Charles Eneu Johnson Co., Inc.

After a careful survey of the situation, United Carbon has decided to discontinue the printing ink operations of the Johnson company as of April 7, 1956. The decision was dictated by the pressing necessity for replacement of the main Johnson plant at Philadelphia, Pa.

• ARABOL MFG., CO. New York, N. Y. has bought from the Dewey & Almy Chemical Co., division of W. R. Grace & Co. the latter's current formulae for manufacturing resin emulsion adhesives.

Arabol plans to manufacture these products and carry them in stock throughout the country.

• GENERAL ELECTRIC'S Medium Induction Motor Department, Schnectady, N. Y., has created four operating sections to improve customer service through closer working relationship between management and the department's manufacturing units.

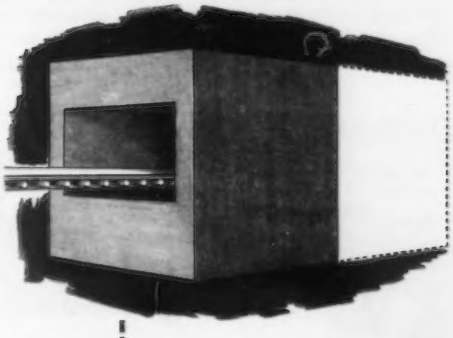
Managers of the new sections are Glenn A. Cook, Low Integral Horsepower and Wire Mill Products; Peter N. Guernsey —manufacturing, and David H. Ware—engineering, High Integral Horsepower Products; Geoge B. Woods, AC Specialty and Atomic Motor Products, and James H. Taylor, Medium Integral Horsepower Products.

• TRACERLAB INC. reports William E. Barbour, Jr., was elected chairman of the board and William O. Faxon, president at recent meeting of the board of directors of the company. Mr. Barbour was a principal founder of Tracerlab and has served as president since its inception. Mr. Faxon has served as executive vice-president and will now be responsible for all of the operations of the newly integrated activities of the company.

The directors also elected Malvern J. Gross of Rochester, N. Y., vice-president, and general manager of the Keleket X-Ray Division.

Wolverine JETZONE
DRYER SECTIONS

make CURING and DRYING RANGES that



. . . have ANY SPEED

Depending on number of sections used in range. Take less space per output.

. . . ready ANYTIME

To be assembled quickly in the field into a high speed range. Self container sections shipped as units minimize erection time in your plant.

for ANY MATERIAL

That can be handled in a continuous moving web, and does not require temperature in excess of 1000° or velocities in excess of 10,000 feet per min. and can be dryed by air or air-gas mixtures.

. . . write NOW

For your catalog of Wolverine Self Contained JETZONE DRYER SECTIONS

"TAKING THE MYSTERY OUT OF DRYING"
WOLVERINE
EQUIPMENT COMPANY
31 MAIN ST., CAMBRIDGE 42, MASS.

• AMERICAN CYANAMID CO. has named Dr. Richard O. Roblin, Jr. and Dr. Robert P. Parker assistant general managers of the Pigments and Research Divisions, respectively.

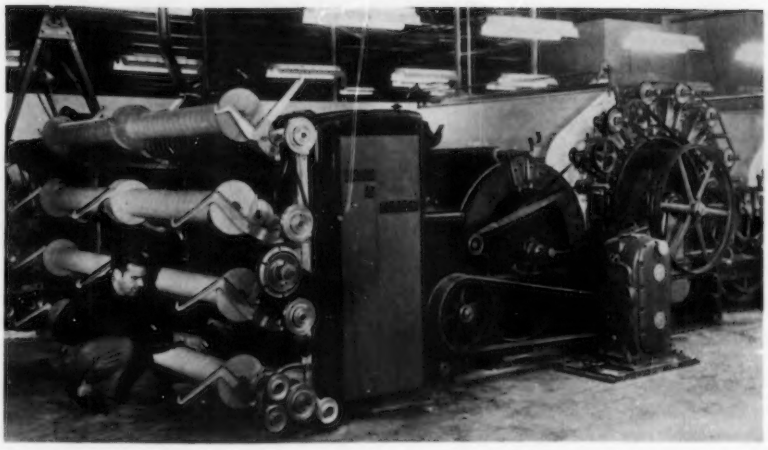
Dr. Roblin, formerly assistant general manager of the Research Division, has been with Cyanamid since 1934.

Internationally known for his work in chemotherapy, Dr. Roblin was the co-discoverer of sulfadiazine and played a major role in the development of DIAMOX, a non-mercurial diuretic used in combating edema.

Dr. Parker, who was formerly director of research at the Pearl River Laboratories, joined the Cyanamid organization in 1933. As a chemist at the Bound Brook plans, Dr. Parker did considerable work in the fields of dyes and pigments.

• RELIANCE ELECTRIC AND ENGINEERING CO. announces the following sales engineering assignments, T. R. Mahoney goes to the staff of the Newark, N. J. Office, F. G. Griswold to Cincinnati, L. L. Seward to Baltimore, and J. R. Perample to Detroit.

• MASON-NEILAN REGULATOR CO. is now located in its newly constructed main office and factory at Nahatan St., Norwood, Mass. Telephone Norwood 7-4600.



CARDING MACHINE at new Albany Felt Co. plant at St. Stephen, S. C.

• ALBANY FELT CO. mill in St. Stephens, S. C., is now in partial operation. Start-up of the first yarn-making machines took place on March 29.

The new plant, costing an estimated $2,000,000, will increase the company's capacity for the production of paper machine felts approximately 20 percent.

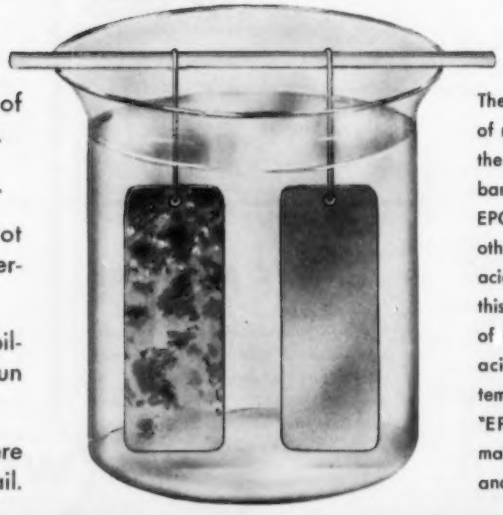
Official opening ceremonies for the new St. Stephen plant have been scheduled for May 12, at which time the plant will be in complete operation. An open house for paper mill superintendents is planned for October, coinciding with the annual joint meeting of the Southern and Southeastern Divisions of The American Pulp and Paper Mill Superintendents Assn. in Charleston, S. C. At that time, all of the new equipment will be in operation.

Robert Sloan has been appointed plant manager of the St. Stephen mill, and Charles Michaels, plant superintendent. Construction of the main building was performed by the Daniel Construction Co., Greenville, S. C., under the supervision of Albany Felt Co. construction engineer Ralph Wood.

THIS NEW KIND OF PAINT

stronger than steel--unaffected by chemicals!

- Dries to 75% of hardness of glass, yet never gets brittle.
- Provides superior adhesion.
- Resists corrosive gases, hot caustics, acids and temperatures.
- Gives baked enamel durability with brush or spray gun application.
- Protects and beautifies where all other type coatings fail.



The picture on the left shows two pieces of metal submerged in acid. One is bare, the other is coated with EPO-LUX. The bare metal is being eaten up, but the EPO-LUX is completely protecting the other metal and is itself unaffected by the acid. In industries all over the country, this type coating is setting new standards of adhesion, durability and resistance to acids, alkali, salts, solvents, weather, temperatures and 68 chemicals. The word "EPO-LUX" written on your letterhead, mailed to us, will bring you specification and use data. WRITE DEPT. 9

STEELCOTE MFG. CO. • 3418 GRATIOT • ST. LOUIS 3, MO.

HELP!

REPEAL THE TARIFF ON CASEIN

To protect the domestic Casein industry, a tariff of 5½c per pound was imposed on imported casein in the year 1930. (Reduced to 2¾c per lb., in 1941).

The tariff on casein no longer serves any purpose as due to the support prices paid by our Government for other dairy products, the casein industry in the United States has been practically liquidated. (Less than 10 factories now in operation compared to over 600 factories in 1930). The tariff on casein at the present time serves only to penalize consumers of this product.

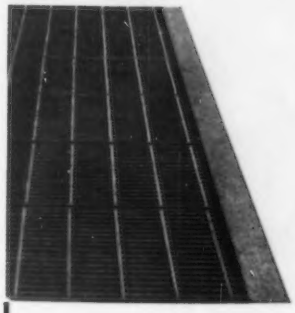
Congressman Baldwin is re-introducing House Bill No. 7417 to transfer casein from the dutiable to the free list. Write your Congressmen and Senators and urge them to favor repeal of this tariff!

JOHN R. SPELLACY

1638 Main St., Walnut Creek, Calif.

ITS THE GREATEST

Its Hendrick Heavy-Duty Grating!



Hendrick heavy-duty grating has a wide range of applications in the paper industry. It withstands the constant beatings of heavy industrial usage . . . takes the heavy shock loading right in its stride. And it's excellent for drainage installation. Bearing bars range in size from 2¼" x ⅜" to 4" x ⅜"; cross bars from 2" x 5/16" to 2¼" x 5/16". Standard grating is also available in sizes from ¾" x ⅛" to 2¼" x 3/16". Write for complete information.

Hendrick
MANUFACTURING COMPANY
77 DUNDAFF ST., CARBONDALE, PA.
Sales Offices In Principal Cities

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The **DRAPER** *Felt*

DRAPER BROTHERS COMPANY

CANTON, MASS.

Restigouche
BLEACHED SULPHITE PULP

for the manufacture of cellophane, rayon and paper products

RESTIGOUCHE COMPANY, Ltd.
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YOUR PAPER WASTE BECOMES PROFIT WHEN IT IS RECLAIMED. DO YOU SUPPORT THE MILLS WHICH MAKE THIS DISPOSAL POSSIBLE?

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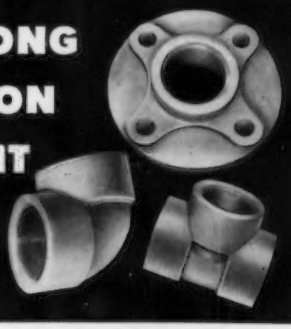
FOR STRONG CORROSION RESISTANT PIPING



Specify these injection-molded PVC fittings and flanges

Tube Turns Plastics, Inc. offers unplasticized PVC fittings made by the exclusive Hendry process. These injection molded fittings are superior to those made by conventional methods—minimum tensile strength of High Impact is 6000 psi, of Normal Impact, 7000 psi. Injection molding provides highest density, complete homogeneity. Tube Turns Plastics' fittings are non-toxic and completely inert. Resist both internal and external corrosion and will handle most chemicals up to 165°F. Investigate PVC for piping your corrosive materials. For booklet write Tube Turns Plastics, Inc., Dept. PF-4, 2929 Magazine Street, Louisville, 11, Kentucky.

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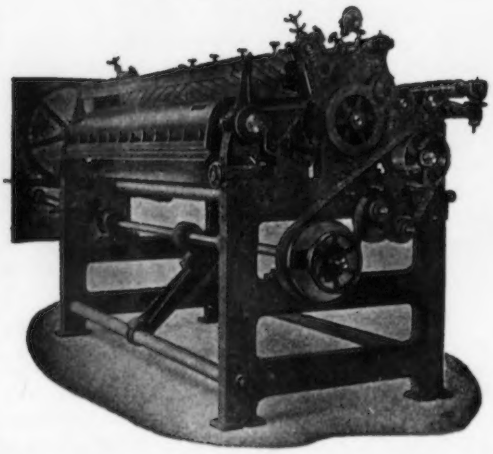
MODEL 28

ROLLER BEARING CUTTER



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LAWRENCE, MASS.
MAKERS OF
SINGLE, DUPLEX AND DIAGONAL PAPER CUTTERS
CUTTER KNIVES, PATENT TOP SLITTERS

United Blacks

DIXIE ○ KOSMOS
PARIS BLACKS

Carbon blacks for all paper and board stocks—outstanding soft texture, particle fineness and jet black color. Takes well to the fiber, shows high retention.

Best for performance in the Beater and Jordan because of ease of wetting and ready dispersion in the furnish.

KOSMOS BRAND DIXIE BRAND

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CANADA: CANADIAN INDUSTRIES, LIMITED

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Westvaco manufactures a wide range of high quality paper products — from fine printing to rugged converting papers. All of these papers are made from virgin chemical pulps to precise standards of uniformity and quality — Westvaco's guarantee of top performance.

Printing Papers . . . Coated and uncoated letterpress, coated and uncoated offset, and gravure.

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Kraft Papers . . . Bag, multiwall sack, envelope, asphalting, impregnating, waxing.

Containerboard . . . Linerboard and corrugating medium.

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West Virginia Pulp and Paper Company
230 Park Avenue, New York 17, N. Y.
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HELP WANTED—One Dollar a line. Minimum charge $4.00.
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If box number is used—75 cents additional

Address replies to advertisements appearing under Box Number in care of PAPER TRADE JOURNAL, 15 West 47th Street, New York 19, N. Y.

Help Wanted

POSITIONS OPEN

We can place—Manager newsprint mill, including groundwood mfg.; supt. wet machine board mill; asst. employment mgr.; chief industrial engineer.

Master mechanics, plant engineers, designers and draftsmen; converting maintenance foreman; Cylinder and Fourdrinier tour bosses.

Chemists for mills also for demonstrating and selling; finishing foreman; salesman (several); machine tenders and back tenders.

SEND US YOUR RESUME. Many attractive positions are open for top-notch men. No fee to be paid unless you accept employment through us. Negotiations are confidential.

CHARLES P. RAYMOND SERVICE, Inc.
Phone: Liberty 2-6547
294 Washington St. Boston 8, Mass.

A-23

PLANT ENGINEER

Tired of the cold and snow? Want to enjoy life by getting all the benefits by living in Miami, Fla., housing arranged for you and your family, plus a well paying job and bonus?

The man we need must have a thorough knowledge of plant maintenance, boilers, turbines and diesels; supervise a crew of ten men, yet be versatile enough to adapt himself to the operation of a medium size one machine folding board mill. All replies held confidential. Box 56-130 care Paper Trade Journal.

A-30

SALARIED POSITIONS $5,000 to $35,000. We offer the original personal employment service (established 46 years). Procedure of highest ethical standards is individualized to your personal requirements. Identity covered: present position protected. Ask for particulars. R. W. BIXBY, INC., 563 Brisbane Bldg., Buffalo 3, N. Y.

A-23

A large multi-plant paper manufacturer specializing in fine papers has an opening for Mill Manager for a newly acquired and reconditioned two-machine mill in Eastern New York state. We are looking for an experienced young assistant mill manager who is ready to move up.

Please send resume of your work and salary history to Box #56-125 care Paper Trade Journal.

A-23

Help Wanted

WANTED

Electrical engineer to head up electrical division in design engineering department for plant layout work including automatic control for mechanization project. Experience in board plant or pulp mill helpful. Give education, experience and salary desired in first letter. Location south—city of 30,000. Excellent living conditions. Address Box 56-127 care Paper Trade Journal.

A-23

Managing Superintendent experienced making facial tissue. State full qualifications. Mill located Greenwich, N. Y. Reply:

Golden Fleece Tissue Mills, Inc.
500 Fifth Avenue
New York 36, New York

A-23

CHEMIST or CHEMICAL ENGINEER

Degree required. Position for development work in large paperboard mill. Previous experience in paper industry helpful but not necessary. National Company. Good starting salary. Write or apply, Personnel Office—Robert Gair Company, Inc., Uncasville, Connecticut.

M-7

TRAINED EXECUTIVE

Broad experience with kraft pulps; specialty papers and paper board. If you need better quality and increased production call or write Herbert Maus — Phone 204J — Box 149 — Springhill, Louisiana. 32 years experience — results guaranteed.

M-14

Paper manufacturer with multi-plan operation has opening for recent engineering graduate in its staff Quality Control organization. It is desirable that this man have quality control or statistical training. More important, however, is that this man be a self-starter with initiative and ability to work with others. Location: Western Massachusetts.

Please reply to Quality Control Coordinator, Peter J. Schweitzer, Inc., Lee, Massachusetts.

A-23

Help Wanted

WANTED
MECHANICAL ENGINEER

Particularly qualified for surveys and report preparation covering industrial power plants and steam and power uses in paper mills, salt plants and industries with similar uses.
Pension plan; group insurance and other benefits; good salary; growing company.
Address Box 56-117 care Paper Trade Journal.

A-30

CHEMICAL ENGINEERS

Research Department of progressive organization needs chemical engineers to plan, supervise, and conduct research in papermaking and in all phases of coating of paper. Projects will involve both fundamental and practical studies in well equipped laboratory.
Age 25 to 35 with two to five years' experience in paper industry preferred but not essential. Location in mountain recreation area of Western Maryland.
For more detailed information, send complete resume of education and experience to:
Research Director
West Virginia Pulp & Paper Co.
Luke, Md. A-23
All replies will be held confidential.

IMPORTER OF Fourdrinier Wire also manufacturer of Wooden Plugs, seeks services of experienced Paper Mill man to assist in management and sales. Investment desired. Apply to J. Willard Heisley & Co., Philadelphia Bourse Bldg., Philadelphia, 6, Pa. A-23

WANTED—Thoroughly experienced mechanical engineer for board mill on chipboard and newsboard. Permanent position and complete charge in modernizing mill. Write, giving complete experience, background and salary expected. Address Box 56-115 care Paper Trade Journal. A-30

Situations Wanted

BOARD SUPERINTENDENT

Twenty-eight years of practical experience in manufacturing high grade folding boxboard, frozen food cartons on seven and eight cylinders from bleached sulphite, sulphate, old paper stock. Aggressive man, excellent references, good health. Address box 56-41 care The Paper Trade Journal.

A-23

SALES ENGINEER — Chemical background. Ten years successful experience sales and sales development technical, laminated and functionally coated papers to industry, converters, jobbers. Seeks position with growth opportunity. Strong background all packaging materials. Particularly well versed polyethylene extrusion laminates. Prefer sales development at management level in paper or chemical field. References. Resumé on request. Address Box 56-132 care Paper Trade Journal. A-30

SUPERINTENDENT—25 years experience on Yankee Fourdrinier, making napkin, towel and itssue. Also capable of handling converting. Address Box 56-113 care Paper Trade Journal. A-23

BEATER ENGINEER—Age 47, 24 years paper making experience, 10 years as beater engineer on various stocks and colors. Have had complete charge of stock preparation. Available. Address Box 56-129 care Paper Trade Journal. A-30

SUPERINTENDENT wishes to make change. have had 30 years of practical experience in manufacture of paper such as Bond, Ledger, Bristols, Offset and similar grades, both in Sulphite and rag. Can furnish references. Address Box 56-124 care Paper Trade Journal. M-14

Situations Wanted

SUPERINTENDENT—Thirty five years of experience in manufacturing paperboard—Folding, Set-up, Bristols and Test Liner Grades. References pertaining to character and ability furnished on request. Available June 1st. Address Box 56-120 care Paper Trade Journal. A-23

WORKS MANAGER—Production Executive; paper, board and conversion; seeks challenging opportunity in organization needing man exceptionally capable in organization; manufacturing; and labor relations. Employed. Diversified lines. Addr ess Box 56-109 care Paper Trade Journal. A-30

For Sale

STAINLESS STEEL
350'-10" 347 S/S Pipe; 60,000'-1" S/S Tubing; 500 Valves ½" to 4".

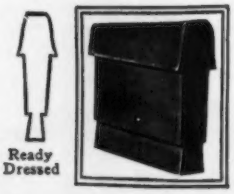
NASH REBUILT VACUUM PUMPS
#H-7, #H-6, #L-5, #L-3, #4, #2.

Brill Equipment Company
2401 Third Ave., New York 51, N. Y.
A-23

PAPER COATING MACHINERY MANUFACTURERS — Waxing, Oiling, Carbon Laboratory Coating and Treating and Flat Ream Measuring and Converting Machines. New Improvement. THE MAYER MACHINE COMPANY, INC., 1313 Buffalo Road, Rochester 11, N. Y. TF

For Sale

READY DRESSED
MILL COGS
LABOR SAVING **TIME SAVING**



The most economical filling that can be put in a mortise wheel

QUICK SERVICE
ON ALL SIZES
Write for Instruction Sheet "C" which is free

THE N. P. BOWSHER CO.
SOUTH BEND, IND.
A-23

FOR SALE—1000 Tons M/F Newsprint on rolls, substance 52 grs./sqm., excellent French quality, delivery second half 1956. Address Box 56-123 care Paper Trade Journal. M-7

For Sale

FOR SALE — PHOENIX, N. Y.

TISSUE AND TOWELING PAPER MILL

Production 15,000 lbs. Tissue or 20,000 lbs. Toweling. Brick and concrete sprinklered buildings — 25,000 square feet on river with two water wheels, 250 h.p. each with generators.

Excellent skilled labor available.

90" Bagley & Sewall single cylinder machine complete including enclosed drives and main motor drive.

Machine including stock preparation equipment erected and ready to run.

READY FOR IMMEDIATE START UP.

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YOUR GUARANTEED CASH MARKET FOR SURPLUS MACHINERY
WITH IMMEDIATE REMOVAL FROM YOUR MILL

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FOR SALE
Taylor recorders and load elements, range 0 to 5000 lbs. pressure for beater and jordan application . . .
13 Used, Good Condition
4 Reconditioned, never used
2500 Charts
Make us an offer.
Fox River Paper Corporation
Instrument Department
Appleton, Wisconsin
A-23

SURPLUS PAPER MILL EQUIPMENT FOR SALE

Equipment includes pumps, reducers, motors, rolls, etc. For further information contact Purchasing Department, Union Bag & Paper Corp., PO Box 570, Savannah, Ga.
A-30

FOR SALE—50" and 60" Shear-cut Slitters & Rewinders; SET-UP AND FOLDING BOX MACHINES. Address Box 9-B, 3180 Lake Shore Dr., Chicago, 14, Ill. TF

FOR SALE—2 "Asten" Dryer Felts #99 open ends, 76" x 156' and 76" x 173'. ROCKY RIVER PAPER MILLS, INC., Three Rivers, Mich. A-23

FOR SALE

2—10 plate, 8—12 plate Impco Bronze Vat Flat Screens, 2 Screens in line, Motor Bracket and Drive on Discharge end, less motors.

Also, large inventory stainless steel screen plates available.

Address Inquiry to:

GOULD PAPER COMPANY

LYONS FALLS, NEW YORK

A-23

FOR SALE OR TRADE

1—Noble & Wood Breaker Beater, 1500 lb. cap., New 1948.

2—Valley Iron Works Beaters with Deinking equipment, 1000 lb. cap.

2—Dayton High Speed Beaters, 1000 lb. cap., New 1948 & 1930.

ROCKY RIVER PAPER MILL, INC.
Three Rivers, Michigan
M-14

FOR SALE

TISSUE MILL **NEW ENGLAND**

Now operating 7 to 9 tons per day of Wrapping Tissue.
Address Box #56-126 care Paper Trade Journal.
A-23

FOR SALE

72" Hamblet Sheeter, Layboy Backstand.
96" Moore & White Sheeter, 8-roll Backstand and Layboy.
40" Sheridan "New Model" Cutter.
36" Waldron 2-Drum Rewinder.
50" Cameron Type 6 Slitter.
48" Kidder Slitter, two rewind shafts.
48" Maxson Layboy and Sheet Counter.
60" Moore & White Layboy
62" Moore & White Layboy.
50" Hamblet Sheeter & Layboy.
20 New Fast Flexible Couplings for 2", 2½" & 3½" shafts.

Thomas W. Hall Co.
Stamford, Conn. TF

Wanted

WANTED TO BUY:

Used shear type slitter-rewinder. Size 60" minimum to 72" maximum. Rochester Paper Company, Rochester, Michigan.
A-23

FOR SALE

BARKING DRUM
1—10′ x 30′.

BEATERS
2—1500 lb. rag beaters, Valley Iron, bandless rolls, 54″ x 48″, cast iron tubs, with motors.
Write us regarding your requirements.

BREAKER STACK
1—110″ face 2 roll breaker stack, with frames.

CALENDER STACKS
1—3 roll 30″ face friction Calender Stack (Holyoke), 2 iron rolls, 1 cotton roll and 1 spare cotton roll.
1—3 Roll 84″ Calendar Stock.
1—4 roll 72″ Calender Stack. (Extra heavy duty).
1—5 Roll 56″ (Heavy Duty)
1—5 Roll 90″.

CHIPPERS
1—96″ Murray 6 knife chipper, complete with 300 H.P. synchronous motor.
1—96″ Murray 4 knife Chipper—anti-friction bearings.
24—Chipper Knives 15⅞ x 8¾, 2 slot.

CLASSIFINER
1—Dilts Classifiner, practically new with motor.

CORE MACHIINE
1—M. D. Knowlton tube winder, 94″ face.

CREPER AND WAXER
1—80″ Creeper and Waxer, excellent condition, details on request.

CRUSHER & HAMMERMILL
1—Murray Chip Crusher.

CYLINDER MOLDS
2—30″ diameter x 72″ face.
1—30″ diameter x 92″ face.
2—36″ diameter x 54″ face.
1—36″ diameter x 84″ face.
2—36″ diameter x 86″ face, with vats.
2—36″ diameter x 110″ face.
3—36″ diameter x 90″ face, 18″ diameter
3—36″ diameter x 90″ face, 18″ diameter couch rolls.

DIGESTERS
2—14″ Globe Rotary Digesters.

DRIVES
1—Sandy Hill, Right Angle, 50 h.p.—4.75 to 1.
1—Jones 21 H. P., ratio 10 to 1 (enclosed angle drive)
1 #4 Reeves Drive.
1—Vaughn 100 h.p. enclosed single drive, Ratio 7 to 1.
2—Cleveland agitator drives, for chests.
2—Waterbury Hydraulic Variable speed line shaft drives (from 40 to 100 h.p.).
1—#4 Reeves Drive, totally enclosed, Class E, with 25 h.p. splash proof motor.

DRYERS
12—Bagley & Sewall, 48″ diameter x 127″ face, with gears and bearings.
5—24″ diameter x 54″ face, with bearings.
5—28″ diameter x 80″ face with anti-friction bearings.
4—36″ diameter x 115″ face, with gears & bearings.
6—36″ diameter x 44″ face with frames gears & bearings.
1—36″ diameter x 66″ face.
1—36″ diameter x 67″ face.
15—36″ diameter x 72″ face.
6—36″ diameter x 76″ face.
2—Dryers 36″ diameter x 84″ face, with bearings gears & frames.
2—36″ diameter x 80″ face.
1—Dryers 48″ diameter x 134″ face.
1—48″ diameter x 144″ face.
1—62″ diameter x 67¾″ face, bearings & gears.
4—48″ diameter x 50″ face, bearings.
5—60″ diameter x 80″ face, complete.

DYNOFINER
"Rice Barton," details on request.

EMBOSSING CALENDERS
1—43″ 3-Roll Embossing Calender.
1—45″ Meadows 2 roll embosser.
Write us regarding your requirements.

EXTRACTOR ROLLS
1—Extractor roll, 26″ diameter x 104″ face, with rubber couch roll.
1—Rice Barton & Fales Extractor Roll, 26″ diameter x 104″ face, with rubber couch roll.

FELT CONDITIONER
1—160″ Vickery, complete.

FLAT SCREENS
2—14 plate Parker, roller shoes.

GEARS
Write us regarding your requirements.

GRINDERS
2—4 pocket Grinders.
2—3 pocket Grinders.

JORDANS
1—#4 Emerson Jordan, anti-friction bearing.

LABORATORY EQUIPMENT
Write us regarding your requirements.

LAMINATING MACHINES
1—72″ Hudson-Sharp laminating machine, reverse coater.
2—26″ Polyethylene laminators.
2—84″ Asphalt laminators.
1—72″ Beloit Laminator, complete with drive.

MOTORS
1—50 H.P. Upright motors, air cooled 3/60/440, 1150 R.P.M. (Ball Bearing).
Write us regarding your requirements.

PRESSES
Write us regarding your requirements.

PRESS ROLLS
1—Chilled iron, chrome plated, 12″ x 100″
1—Chilled iron, chrome plated, 10″ x 74″

PULLEYS
Various cone and assorted pulleys.

PULPERS
1—Jones Pulper.

PUMPS
1—Shartle Bros. high density pump, 2000 g.p.m., 62 ft. head.
Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.

RAG CUTTERS
Write us regarding your requirements.

REELS
1—86″ 2 bowl reel.
1—84″ 3 bowl revolving reel.
1—100″ Rice Barton 2 bowl Reel, heavy duty.
1—123″—3 bowl revolving reel.
1—134″—2 drum.
1—72″ Dowingtown Reel, 2 bowl.

REFINER
1—12″ Wiener Refiner.

ROLLS
1—Rubber Couch Roll—20″ diameter x 108″ face.
Felt, Table, Press, Breast, Couch, etc. Various sizes and types. (Bronze, Rubber, Iron, etc.).

ROTARY SCREENS
1—#1A Bird, copper vat.
Write us regarding your requirements.

SAVEALLS
2—Sandy Hill, 36″ diameter x 86″ face cylinder molds, anti-friction bearings and couch rolls.

SCREEN PLATES
Bird Rotary screen plates.
Plates (new) for flat screens.
Write us regarding your requirements.

SCREEN
1—Bird Machine Company Jonsson Screen.

SHAKE
1—Bevis Fourdrinier Shake.

SHEETERS
1—42″ Finlay Sheeter.
1—85″ Hamblet Sheeter (duplex) layboy, 11 rollback stand.
1—140″ Hamblet (Simplex).
1—140″ Hamblet (Duplex).

SHOWERS
Write us regarding your requirements.

SLIITTERS & WINDERS
1—169″ Bagley & Sewall, 2 drum, shear cut, 60″ diameter rewind.
1—42″ Cameron type 24-3A.
1—42″ Cameron—Type 6.
1—42″ Cameron—Type 9.
1—50″ Cameron—Type 6.
2—52″ Cameron—Type 10.
2—62″ Cameron—Type 6.
1—62″ Cameron (duplex).
1—72″ Cameron—Type 10.
1—157″ Cameron—Type 18.
1—177″ Cameron (Shear) Type 19.
1—40″ Fales Slitter.
2—60″ Kidder.
1—40″ Langston.
1—120″ Moore & White, 4 drum winder.
2—86″ Two Drum Moore & White, 50″ diameter rewind.

SLITTING DEVICE
84″—Quick change slitting device shear cut, complete, practically new.

STEAM JOINTS
18—3″ Johnson steam joints (new).

STOCK PUMPS
1—8 x 18 Shartle Triplex.
2—10 x 10 Beloit Duplex, low type.
2—10 x 20 Shartle Triplex.
1—12 x 20 Shartle Triplex.
Advise as to your requirements.

SUCTION BOXES
Write us concerning your requirements.

SUCTION COUCH SHELL
1—Downingtown suction couch shell only, 127½″ face x 26″ diameter.

SUCTION COUCH ROLLS
1—36″ diameter x 246″ face, SKF bearings.
1—Downingtown suction couch roll, complete (new) 127½″ face x 26″ diameter.
1—Sandusky Suction Couch Roll 18″ diameter x 98″ face.

SUCTION FELT ROLL
1—Gilbert & Nash 122″ face.

SUCTION PRESS ROLLS
1—Sandusky Suction Press Roll 130″ drilled face x 14 7/16″ diameter.

SUPERCALENDER STACKS
1—10 Roll 60″ Holyoke.

TABLE ROLLS
22—Rubber Covered 10″ diameter x 246″ face. Write us regarding your requirements.

THICKENERS
1—All cast iron vat, 30″ diameter x 115″ face cylinder mold, anti friction bearings, 18″ couch roll—very good condition.
Write us regarding your requirements.

TOILET WINDERS
2—72″ Hudson-Sharp (Surface type winder).

TRIMMERS
1—50″ Oswego.
1—63″ Oswego cutter.
1—60″ Guillotine cutter.
1—64″ Seybold cutter.

VACUUM PUMPS
2—L-6 Nash vacuum pumps.
2—L-5 Nash vacuum pumps.
2—L-4 Nash vacuum pumps.
2—#1 Nash Hytor vacuum pumps.
1—#2 Nash Hytor vacuum pump.
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VALVES
8—10″ 3 way DeZurik Dump Valves.
6—12″ 3 way DeZurik Dump Valves.

VATS
2—D. J. Murray Company Vats, iron ends, for 42″ x 120″ cylinder molds, overflow and counterflow.

WET MACHINE
1—72″ Wet Machine.

YANKEE DRYERS
1—84″ diameter x 56″ face.
2—108″ diameter x 72″ face.

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J. J. ROSS COMPANY

Tel.—Bigelow 3-3720

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Newark 5, N. J.

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Beaters — Jordans — Motors

3—E. D. Jones Cast Iron Tub Beaters, 2400# capacity, rolls 67" dia., 60" face, 100 H.P. G.E. Motors complete with magnetic starters. A-1 condition.

3—E. D. Jones Majestic Jordans, anti-friction bearings, complete with G.E. Synchronous Motors and magnetic starters, good fillings.

1—E. D. Jones Beater Roll, 67" dia., 60" face, complete with hood, stands and all iron work from wood tub beater. Excellent condition. Used very little.

4—Shartle Bros. No. 6 Jordans, anti-friction bearings, complete with synchronous motors and magnetic starters.

The above can be inspected from our shop on their original foundations, and here is a chance to buy used equipment, as good as new and modern, at a big saving.

OSBORNE PAPER MILL EQUIPMENT CORP.

Fulton, New York Tel. 2-4254

A-23

FOR SALE

Heavy duty Hudson Sharp embosser, almost new. Maximum embossing face 50". This machine is equipped with a 44" printing letterpress unit for tinting-embossing. Unwind provides for rolls up to 40" in diameter, center shaft rewind, equipped with 10 horse power slip ring, 220 volt, 3 phase motor. One set embossing rolls Alligator design with machine. This embosser is a beautiful piece of equipment in practically new condition. Address Box 56-131 care Paper Trade Journal.

A-30

LOOK
through the columns of the
CLEARING HOUSE
You are bound to see
what you need.

FOR SALE

1—72" Trim complete Fourdrinier Paper Machine, still on original foundation. Additional details on request.

J. J. ROSS COMPANY

377 Frelinghuysen Ave., Newark 5, N. J.
Tel: Bigelow 3-3720

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FOR SALE

Complete Unit for Producing Twisted Paper Products. Samples and listing of equipment furnished on request.

J. J. ROSS COMPANY

377 Frelinghuysen Ave., Newark 5, N. J.
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WANTED

ALWAYS BUYING USED PAPER

AND PULP MILL EQUIPMENT

J. J. ROSS COMPANY

377 Frelinghuysen Ave., Newark 5, N. J.

Tel: Bigelow 3-3720 A-23

350 H.P. MOTOR FOR SALE

New Elliott (Crocker-Wheeler Motor) 440 volts, 60 cycle, 3 phase, 1750 R.P.M. Slip Ring. On original skid. Never used. Larger motor substituted.

Thomas W. Hall Co., Stamford, Conn.

TF

WANTED

Laboratory Fourdrinier Paper Machine.

Trim Width under 36 inches.

Address Box 56-110 care Paper Trade Journal.

A-30

WANTED—One Hayssen 4 Roll Toilet Tissue Wrapping Machine for making overall wrap with Folded ends. Please reply to Box 56-128 care Paper Trade Journal. A-23

WANTED

Job Lots of Paper & Paperboard

We need a substantial supply of odd lots, side rolls, obsolete, surplus, or damaged lots of paper. Will buy all grades, any quantity. MELROSE PAPER CO., INC., 208 Walnut St., Philadelphia 6, Pa. Market 7-0800. TF

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A Textbook for the Paper and Paperboard Converting Industry.
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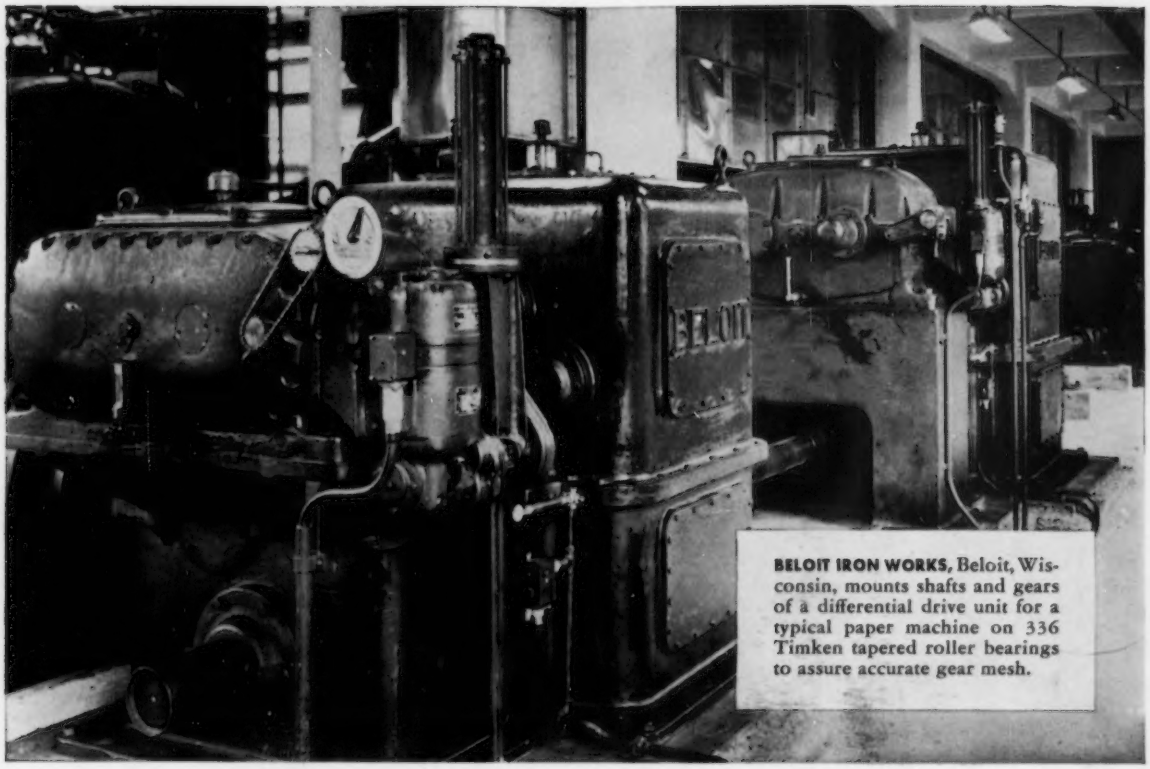

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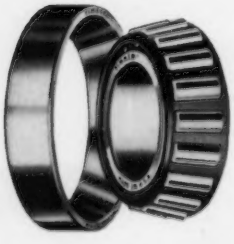

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